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STATE COURSE

of

Study for High Schools

of

LOUISIANA

1913

Issued by Department of Education

T. H. HARRIS, Superintendent

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Schools taking steps to qualify as "Approved High Schools" are requested to fill in answers in the affirmative to the following questions, comply with the requests made, and forward same to the State Department of Education.

1. (a) Does your school meet the general requirements of the State Board of Education concerning the title of the property, resolutions of the parish board establishing such schools, number of grades in high school?.....

   (b) Have you filed copies of deeds and copies of resolutions of parish board with State Department of Education?.....

2. Do you have a sufficient number of teachers to follow the State Course of Study?.....

   Do you extend the departmental plan through the eighth grade to secure the more successful introduction of algebra and high school English?.....

3. Does your school term include nine months of work?.....

4. Are your recitation periods forty minutes in length?.....

   FORWARD TO THE STATE DEPARTMENT OF EDUCATION AT THE EARLIEST POSSIBLE TIME A TYPEWRITTEN DAILY PROGRAM OF THE HIGH SCHOOL GRADES, SHOWING THE LENGTH OF RECITATIONS, NAMES OF TEACHERS, AND INCLUDING THE EIGHTH GRADE IN THIS SCHEDULE.

5. Are there at least two teachers above the seventh grade?.....
6. Has the principal at least two forty-minute periods a day for supervision?.....
7. (a) Are you doing the required individual laboratory work in teaching the inductive sciences?.....

   (b) Have you $150 worth of apparatus to teach physics?.....

   Have you $75 worth of apparatus to teach chemistry?.....

   Have you $75 worth of apparatus to teach biology?.....

   (c) Is all of your apparatus kept in cases provided with glass doors?.....
8. FORWARD AS SOON AS POSSIBLE THE DETAILED LISTS OF APPARATUS PURCHASED FOR EACH SCIENCE, GIVING DETAILED VALUES OF THE SAME.
9. Are you writing out the experiments required in each science and incorporating them in ink in regular laboratory notebooks to be submitted to the State Board of Education?.....
10. Is your high school building adequate in number of rooms, size of rooms, light, sanitary equipment, fire escapes, blackboard surface, modern furniture, playground, etc.?.....

DO NOT ANSWER THESE QUESTIONS UNTIL YOU ARE READY TO SUBMIT ALL OF THE DATA REQUIRED IN THE FOREGOING. SCHOOLS QUALIFYING PRIOR TO DECEMBER 1 WILL SHARE IN THE APPROPRIATION FOR HIGH SCHOOLS.

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T. H. HARRIS, State Superintendent.

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*Under the supervision of E. S. Richardson, head of the Extension Department of the Louisiana State University.

General Statement.

The following course of study for high schools is prepared with the view of making the work definite and explicit in the various high school subjects. An effort has been made to offer some helpful suggestions in the method of instruction that should obtain in the several branches. In most instances a separate list of reference books is appended at the close of the various syllabi.

School authorities, principals and high school teachers are requested to study carefully the contents of the course in order that the purpose of the course may be attained and unnecessary correspondence may be obviated.

Respectfully submitted,

T. H. Harris,

State Superintendent of Public Education.

Baton Rouge, La., October 13, 1913.

Who Can Graduate.

1. Students completing any of the six regular courses outlined in this pamphlet.

2. Students completing three majors, two minors, and one elective.

3. Students completing five majors.

4. Students completing four majors and one minor.

5. Students completing four majors and two electives.

EXPLANATION.

(a) A major is *three units* in any of the following subjects or courses: mathematics, English, science, history, Latin, a modern language, commercial subjects, agriculture subjects, home economics subjects, manual training subjects, rural teacher training subjects.

(b) A minor is *two units* in any of the above subjects or courses.

(c) An elective is *one unit* in any of the subjects or courses in (a) or (b). To these should be added music and drawing when the work of the four years has been completed under the direction of a special teacher of music and art. Half units in closely related subjects may be added to form whole units.

Value of shopwork: benchwork, etc., two years, two units; mechanical drawing, one year, one unit.

NOTE—No student will be permitted to graduate until he has complete *all* of the *required subjects,* 9.5 units, listed on page This is true no matter what course was pursued or the number of units earned.

In arranging his major, minor and elective subjects, a student may make his selcetions from any or all of the six regular courses.

MUSIC AND ART.

The four years' work in music and drawing is given a credit of one unit and may be selected as an elective. This credit will not be allowed, however, except in those schools that employ

special teachers of music and drawing. A student applying for credit in music and drawing will be required to present a certificate from the special teacher, or teachers, of these subjects showing that the four years of systematic work has been completed.

REGULAR COURSES.

(NOTE—The Arabic numerals represent the number of period per week each subject is recited. The Roman numerals (I) |II. indicate first and second terms, respectively.)

LITERARY COURSE.

	Periods Per Week.	Unit Value.
First Year—		
English	5	1
Botany and Agriculture	5	1
Arithmetic (I)	5	.0
Algebra (II)	5	.5
Geography (I)-2	..	.0
Grammar (I)-3	..	.0
Zoology or Commercial Arithmetic (II)	5	.5
Music and Art	2	...
	22	
Second Year—		
English	5	1
Algebra	5	1
Ancient History	5	1
Latin or Modern Language	5	1
Music and Art	2	...
	22	
Thgird Year—		
English	5	1
Plane Geometry	5	1
Mediaeval and Modern History	5	1
Latin or Foreign Language	5	1
Music and Art	2	...
	22	

Fourth Year—

American History and Civics	5	1
English (I) and (II) if desired	5	.5 or 1
Secondary Arithmetic or Solid Geometry (II)	5	.5
Latin or Foreign Language	5	1
Physics	5	1
Music and Art	2	...
	22	
Music and Art (four years, special teacher)	..	1

COMMERCIAL COURSE.

First Year—	Periods Per Week.	Units Value.
English	5	1
Botany and Agriculture	5	1
Arithmetic (I)	..	.0
Algebra (II)	5	.5
Geography (I)-2	..	.0
Grammar (I)-3	..	.0
Commercial Arithmetic (II)	5	.5.
Music and Art	2	...
	22	

Second Year—

Algebra	5	1
English	5	1
Ancient History	5	1
Bookkeeping or Typewriting	5	...
Music and Art	2	...
	22	

Third Year—

English	5	1
Plane Geometry	5	1
Typewriting or Bookkeeping	5	...
Stenography (optional)	5	...
Foreign Language	5	1
Music and Art	2	...
	22	

Fourth Year—

American History and Civics	5	1
Physics	5	1
Foreign Language	5	1
Economics (I)	5	.5
Commercial Gography or Commercial Law (II)	5	.5
Music and Art	2	...
	22	
Music and Art (four years, special teacher)	..	1
Complete Course in Bookkeeping	..	1
Complete Course in Stenography	..	1
Complete Course in Typewriting	..	.5

AGRICULTURE COURSE.

First Year—	Periods Per Week.	Unit Value.
English	5	1
Botany and Agriculture	5	1
Arithmetic (I)	..	.0
Algebra (II)	5	.5
Geography (I)-2	..	.0
Grammar (I)-3	..	.0
Zoology (II)	5	.5
Field and Shop	3	...
Music and Art	2	...
	25	

Second Year—

English	5	1
Algebra	5	1
Ancient History	5	1
Farm Crops	5	1
Field and Shop	3	...
Music and Art	2	...
	25	

Third Year—

English	5	1
Plane Geometry	5	1
Chemistry	5	1
Farm Animals	5	1
Field and Shop	3	...
Music and Art	2	...
	25	

Fourth Year—

American History and Civics	5	1
Physics	5	1
Soils and Fertilizers	3	1
Rural Law and Farm Management	2	
Secondary Arithmetic and Farm Boopkeeping.	5	1
Field and Shop	3	...
Music and Art	2	...
	25	
Field and Shop (four years)	..	1
Music and Art, (four years, special teacher)	..	1

HOME ECONOMICS COURSE.

First Year—	Periods Per Week.	Unit Value.
English	5	1
Botany and Agriculture	5	1
Arithmetic (I)	..	.0
Algebra (II)	5	.5
Geography (I)-2	..	.0
Grammar (I)-3	..	.0
Zoology (II)	5	.5
Sewing and Cooking	3	...
Music and Art	2	...
	25	

Second Year—

English	5	1
Algebra	5	1
Ancient History	5	1
Bacteriology (1)	5	.5
Physiology (II)	5	.5
Sewing and Cooking	3	...
Music and Art	2	...
	25	

Third Year—

English	5	1
Plane Geometry	5	1
Chemistry	5	1
Poultry and Dairy (1)	5	.5
Food Study and Dietetics (II)	5	.5
Music and Art	2	...
Sewing and Cooking	3	...
	25	

Fourth Year—

American History and Civics	5	1
Physics	5	1
English (1)	5	.5 or 1
Secondary Arithmetic and Farm Accounts (II)	5	.5 or 0
Practical Art	2	...
Sewing and Cooking	3	...
Music and Art	2	...
	22	
Sewing and Cooking (four years)	..	1
Music and Art (four years, special teacher)	..	1

RURAL TEACHER TRAINING.

First Year—	Periods Per Week.	Unit Value.
Same as Home Economics Course.		
Second Year—		
English	5	1
Algebra	5	1
Ancient History	5	1
Poultry and Dairy (I)	5	.5
Physiology (II)	5	.5
Sewing and Cooking	3	...
Music and Art	2	...
	25	
Third Year—		
English	5	1
Plane Geometry	5	1
Mediaeval and Modern History	5	1
Elementary Psychology (I)	5	.5
School Management (II)	5	.5
Sewing and Cooking	3	...
Music and Art	2	...
	25	
Fourth Year—		
American History and Civics	5	1
Physics	5	1
English (I)	5	.5 or 1
Secondary Arithmetic (II)	5	.5 or 0
Practical Arts	2	...
Reviews and Methods	5	1
Music and Art	2	...
Sewing and Cooking (four years)	..	1
Music and Art (four years, special teacher)	..	1
	24	

GENERAL COURSE.

First Year—	Periods Per Week.	Unit Value.
Same as Commercial Course.		
Second Year—		
English	5	1
Algebra	5	1
Ancient History	5	1
Zoology (I)	5	.5
Physiology (II)	5	.5
Music and Art	2	...
	22	
Third Year—		
English	5	1
Plane Geometry	5	1
Mediaeval and Modern History	5	1
Physics	5	1
Music and Art	2	...
	22	
Fourth Year—		
American History and Civics	5	1
Chemistry	5	1
English (I)	5	.5 or 1
Economics (II)	5	.5 or 0
Solid Geometry (I)	5	.5
Secondary Arithmetic (II)	5	.5
Music and Art	2	...
Music and Art (four years, special teacher)	..	1
	22	

EXPLANATION OF FOUR DAILY RECITATIONS OR SIXTEEN-UNIT MAXIMUM.

The average student in the high school has as much as he can do to pursue properly a course comprising four subjects at one time, and students should be discouraged from attempting, if not actually forbidden, to make more than four units each school session, unless the additional credits made are in recreational subjects requiring manual activity and no home preparation.

REQUIREMENTS FOR STATE APPROVAL OF LOUISIANA HIGH SCHOOLS.

1. Title to the property on which the school is located must be vested in the parish board of education, or in the public; provided, that in the latter case full use of the property shall be accorded the parish board of education for the purpose of maintaining a high school, and the terms of the lease specified in the contract properly drawn and duly recorded.

2. The parish board of education must pass a resolution establishing such school as a high school.

3. All the schools in the parish where the high school is established must run for seven months, except where a special fund is provided to maintain the high school for the length of its term in excess of the common school term maintained out of the general school funds of the parish.

4. No high school shall be approved or maintained with an attendance of fewer than twenty (20) students in the high school department; provided, that this ruling shall not prevent each parish from maintaining at least one high school.

5. The minimum length of session for such school shall be nine months.

6. The teaching force shall be adequate and shall in every case consist of at least two teachers, each of whom shall be engaged exclusively in work above the elementary grades.

7. No teacher holding lower than a first grade certificate shall be employed in State Approved High Schools.

8. Buildings for high schools shall be suitable—that is, proper classroom space and furnishings shall be provided for the work of these schools.

9.. The Course of Study must, taken with the lower grades, cover at least eleven years.

10. An Approved High School shall follow the State Course of Study.

11. The minimum length of recitation periods for high school subjects shall be forty minutes.

12. The inductive sciences—physics, chemistry and biology—shall be taught by the individual laboratory methods, the apparatus to cost not less than $300—$150 for physics, $75 for chemistry, and $75 for biology. All apparatus shall be kept in cases provided with glass doors.

13. Every State Approved High School must have a library for its high school department costing at least $75, and containing at least one complete dictionary, one general encyclopædia, and such other books as will enable students to do the collateral reading in the English course and the reference work recommended for history courses.

14. The principal of such school shall devote at least two recitation periods a day to supervision.

15. In order to meet the requirements of the Louisiana Sanitary Code, it is essential that each Approved High School employ a janitor.

16. The cumulative record card in a form approved by the Department of Education must be used for each pupil enrolled in a State Approved High School, and kept in an indexed card-filing cabinet. Monthly records must be issued to parents showing pupils' records in attendance, scholarship, and conduct.

17. Application for approval as a high school shall be made to the State Board of Education not later than April 1 of each year, in advance of the school session in which the school desires recognition.

18. New schools, submitting before October 1 of each year sufficient data showing that the foregoing requirements are being complied with, shall receive their pro rata amount of the State appropriation for Approved High Schools.

REGULATIONS FOR CARRYING INTO EFFECT THE FOREGOING REQUIREMENTS.

1. Copy of the title or lease to the property, copy of the resolution passed by the parish board, certificate that the schools of the parish run for seven months, or that a sufficient special tax has been voted for maintenance of said school, and copy of the resolution of the parish board to the State Board of Education asking that such school be made a high school, must be forwarded to the State Board of Education for their consideration and approval or disapproval.

2. The lists of science apparatus purchases and the lists of high school library books shall be submitted to the State Board of Education for approval.

3. Principals of approved high schools must report promptly at the end of the first month of school on their school attendance, teaching corps, program of work, etc., by filling out the blanks sent by the Department of Education for that purpose, and thereafter when called upon to do so.

RESOLUTIONS OF EXPLANATION AND INTERPRETATION OF REQUIREMENTS 5, 9, AND 10.

The grades in approved high schools, as well as the high school department, shall be operated for nine months.

There must be an eleventh year class when the school is approved, and prospects of a sufficient high school enrollment to continue the high school permanently.

The work of the pupils and classes must be kept up to the standard set by the State Course of Study with respect to quantity and quality.

In order for a school to become recognized, therefore, it is necessary that it be properly taught several sessions in advance of its approval and that it be equipped with such apparatus and such library equipment as will enable the students to do properly all the work required.

REQUIREMENTS FOR HIGH SCHOOL TEACHERS.

All teachers of high school subjects in State Approved High Schools shall satisfy one of the six following requirements:

1. Teachers who are graduates of a standard college or university as recognized by the Association of Colleges and Secondary Schools of the United States.

2. Teachers now engaged in the work and giving satisfactory service who are graduates of institutions of lower grades than standard colleges, and undergraduates of standard institutions whose work entitles them to a rating at standard colleges of 32 or more college hours.

3. Teachers falling below the standard of 32 hours whose academic training can be valued at not less than 17 college hours, but whose successful high school experience and summer school and institute work enables the State Board of Education to grant them temporarily a maximum of 15 hours for said experience and training.

4. Teachers of special subjects who can show the equivalent of two years' study beyond the high school course in these subjects. Teachers of special subjects who do other high school work besides their special work must conform to the requirements for regular teachers as outlined above.

5. New teachers whose scholastic attainments entitle them to a rating of 36 or more college hours, or who can meet the standard of requirement No. "4" with respect to the subjects they teach.

6. Teachers not meeting the above requirements who shall be approved as teachers in high school departments by the parish superintendent, the high school principal and the Department of Education.

HIGH SCHOOL BUILDINGS AND EQUIPMENT.

A SUITABLE BUILDING.

By the requirement of a suitable building is meant one that provides for comfortable quarters for its high school department consisting of at least one assembly room, a recitation room for each instructor, a laboratory and an office. In communities where the grades and high school are housed in one building,

there should be provided not less than four grade-rooms below the high school. The building must conform to the regulations of the State Board of Health, which provide for state approval of plans and specifications, and for ventilation, lighting, toilets, proper floor space, etc. (See State Board of Health Regulations in Compilation of School Laws, pages 124 to 128.)

FURNITURE.

1. Comfortable patent desks and seats should be provided for classroom and auditorium, for teachers and pupils.

2. Ample blackboards should be provided in every classroom and there should be well-laid chalk troughs at the bottom.

3. Office furniture should include a principal's desk, book shelves or cases, and filing cabinets as required.

4. Laboratories should contain botanical or zoological tables, suitable desks for laboratory work in physics and chemistry, running water in the chemical laboratory, and cases with glass doors for keeping apparatus.

5. Glass cases should be provided for keeping library books.

LABORATORY EQUIPMENT.

The $300 expended in each high school for science apparatus shall be distributed as follows:

(a) $150 for apparatus adequate to carry on a year's work in physics as outlined in manuals.

(b) $75 for suitable chemicals and glass ware for a year's work in chemistry.

(c) $75 for the botanical and zoological outfit of compound microscope, dissecting microscopes, instruments, glass jars, preservatives, etc. (For science apparatus see list, State Course of Study, pages 20 to 29.)

HIGH SCHOOL LIBRARY.

The high school library shall contain at least one complete dictionary, one general encyclopædia, and such other books as will enable students to do the required collateral reading in the English course and the reference work recommended for the history courses and any other research work required.

AFFILIATED HIGH SCHOOLS.

There shall be maintained a list of state affiliated high schools, to comprise such four-year high schools not on the approved list as meet the requirements as to accommodations and equipment, and quantity and quality of work done. These schools shall be under the supervision of the State Department of Education, shall submit reports as desired, and shall receive the endorsement of the State Department of Education on their diplomas, but shall not receive state aid.

STATE AID FOR HIGH SCHOOLS.

The state appropriation for high schools shall be apportioned equally among the State Approved High Schools.

The above high school requirements were approved and ordered published in pamphlet form for distribution.

*PHYSICAL APPARATUS FOR CLASS OF TEN.

		Approximate Cost.
1	micrometer caliper	$ 4.00
1	doz. reagent bottles, glass-stoppered, 4 oz	1.85
5	Florence flasks, 250 cc	.40
10	student lamp chimneys	.50
½	lb. German silver wire, No. 28	.30
2	lbs. of brass wire, Nos. 22 and 28	1.00
3	lbs. of cotton insulated copper wires, Nos. 18 and 24	2.50
2	lbs. of iron wire, Nos. 28 and 32	1.50
1	lb. of copper wire, No. 24	.90
1	iron, soldering, and 1 lb. solder	.75
1	gross test tubes, 6 in. x ¾ in	2.88
5	National trip balances	27.00
10	battery jars, white glass, 4 in. x 5 in	2.50

*Handbook No. 22, New York Department of Education.

MECHANICS.

2	boards, composition of forces	4.00
6	balances, spring, 2 kg	2.40
10	balls, iron, 1 in. in diameter	.80
10	balls, wood, 1 in. in diameter	1.00
5	wagons for inclined planes	5.00
12	glass marbles, ¾ in	.12

HYDRONAMICS AND PNEUMATICS.

2	apparatus, Boyle's law	4.00
1	pump, air, exhaust and condense	22.50
10	cans, overflow, nickel plated	6.00
10	blocks, rectangular, 4x8x8cm., hard wood	.25
20	tubes, thistle, 12 in. long, ⅛ in. bore	.10
5	glass funnels, 3½ in	.14
1	doz. test tubes, 6 in. x ¾ in	.72
2	lbs. tubing, barometer, 11 mm. bore, heavy	.55
2	lbs. tubing, thermometer, 11 mm. bore, heavy	1.00
5	lbs. tubing, soft glass, 3 mm. bore	.40
1	set equilibrium tubes	$ 0.85
1	glass model of lifting pump	1.75
1	glass model of force pump	2.00
1	U-shaped tube to show the principle of hydrostatic press	.25
1	glass model of hydraulic press	2.00
1	set of Pascal's vases	4.25
1	demostration hydrometer	.20
1	glass hydrometer for both light and heavy liquids	1.50
6	specific gravity bottles, 2 oz	.60
1	water hammer	.80
1	plain glass siphon	.25
1	glass tube with bulb to show expansive power of air	.15
1	thin rubber football	1.00

HEAT.

1	model steam engine	3.50
5	air theremometers	1.25
5	apparatus "A," low form with screw top	12.50

1	chemical thermometer, Centigrade	1.60
1	condenser for distillation	2.25
1	brass ring and ball to illustrate expansion	1.25
1	compound bar for showing unequal dilation of different metals	1.25
1	palm glass	.50

LIGHT.

5	plane mirrors, 6 in. x 2 in	.75
5	cylindrical mirrors	2.50
10	lenses, double convex, 10 cm. focus	1.00
1	specimen of Iceland spar	.50
10	prisms, glass, 3 in. x 1 in	4.00
1	Newton color disc and 5 other color discs	1.00

SOUND.

5	tuning forks, middle C	.75
1	diapason	3.50
1	sonometer	5.00
1	heavy bass bow	1.50
1	organ pipe with piston	4.25
1	siren disc and attachment	4.00
5	tubes, resonance, 18 in. x 1½ in	2.25

ELECTRICITY.

10	bars magnets, 6 in. long	$ 2.00
5	compasses, needle ½ in. long	.75
5	pith balls and rod of sealing wax	.30
1	glass friction rod	.40
5	galvonometers	17.50
1	electro magnet, 4 in	1.20
1	motor, Porter No. 2	7.50
5	electric bells	3.00
1	catskin	.75
1	horseshoe magnet	1.00
1	Geissler tube, 6 in	.75
1	model dynamo	4.00
1	sounder and key together on iron base	3.25
1	yard of Japanese silk	.50
1	electrophorus	2.00
10	strips of copper, 1½ x 10cm., wire attached	4.00

20	strips of zinc	.75
5	cells, Daniell's complete	12.00
1	apparatus for decomposing water	2.50
1	Toepler-Holtz machine 12 x 14 plates	26.00
1	lb. fine iron turnings	.10

MISCELLANEOUS.

1	set of 6 in. cork borers	1.00
5	alcohol lamps	.50
25	asbestos sheets	.45
25	iron gauzes	.65
1	tinner's shears, 12 in	2.25
1	gross of corks, assorted sizes	1.50
2	lbs. of rubber stoppers, 1 and 2 holes	2.25
10	five-inch files, 5 round and 5 triangular	.45
10	Mohr's pinchcocks	.10
10	screw pinchcocks	.30
10	graduates, metric cylinder, 100 cc. to 1 cc	.50
1	hydrometer, specific gravity scale, .7 to 1.85	1.40
5	sets weights, metric 500 g. to 1 g. in wooden block	3.00

*APPARATUS FOR A CLASS OF FIVE IN CHEMISTRY.

		Approximate Cost.
5	shallow agate pans, 1 qt	$ 0.75
1	balance, horn pan 8 in. beam	1.50
5	blow pipes, 8 in	.30
5	Bunsen burners or alcohol lamps	.95
5	Burette clamps	1.70
5	clamps for test tubes	.40
1	set of cork borers, 1-6	.75
2	round files	.15
2	triangular files	.19
1	glass cutter	.11
5	iron gauze, asbestos center, 5 in. x 5 in	.55
5	cylinder graduates, 100 cc	1.90
1	cylinder graduate, 500 cc.	.75
5	filter paper boxes, 4 in. diameter	.45

*Handbook No. 22, New York Department of Education.

5	Mohr's pinchcocks, medium	.45
6	porcelain crucibles with cover, No. 00	.54
12	porcelain evaporating dishes, No. 00	1.08
5	mortars, 3½, with pestle	.95
1	lb. 2 hole rubber stoppers No. 7	1.69
1	lb. 1 hole rubber stoppers, to fit 4 in. U tubes	1.69
1	lb. 1 hole rubber stoppers, to fit 6 in. U tube	1.69
10	ft. rubber tubing, 3-16 in., antimony	.52
15	ft. rubber tubing, ¼	1.35
5	deflagrating spoons, ½-in. bowl	.38
5	iron stands, 3 rings	2.45
10	test tube brushes	.49
5	test tube racks	.27
6	triangles, pipe stem, small (to fit No. 00 crucible)	.30
2	thermometers, chemical, 0-250 degrees C	2.40
1	set of weights, 100 g. down to 1 mg	3.40
1¼	lb. spool copper wire, No. 30	.21
1	Coddington lens	1.35
10	beakers, 200 cc	1.00
3	sets of reagent bottles, 125 cc., 4 oz., NH_4,OH, HCL, H_2SO_4, HNO_3, KOH, NaCH	3.57
2	bottles, N. M., ½ gal	.70
12	bottles, W. M., 6 oz	$ 0.74
12	bottles, W. M., 8 oz	.87
2	burettes, 50 cc. grad. to 1-10 cc	2.62
5	Cobalt plates, 2 in. square	.15
5	cylinders, 2 x 12 in	1.70
15	Florence flasks, 250 cc	1.20
15	Erlenmeyer flasks, 4 oz	.90
6	funnels, 60 degrees, 2½ in	.48
6	tabulated retorts, 150 cc	1.38
500	gm. glass rods, 3-16 in	.30
200	test tubes, 6 in. x ⅝ in	2.56
10	test tubes, 6 in. x ⅝ in., hard glass	1.20
5	U tubes, 4 in. arm	.55
5	U tubes, 6 in. arm	.60
500	gm. tubing, soft glass, ⅛ in. diam	.30
50	vials, with cork, height 80 mm., diam. 25 mm	1.13
10	watch glasses, 2 in. diameter	.15
500	glass beads	.75

REAGENTS.	Approximate Cost.
1 lb. alum, potash, pure crystals	.23
1 oz. aluminum chloride, pure	.07
2 lbs. alcohol, 95%	1.02
1 lb. ammonium carbonate C. P.	.35
1 lb. ammonium chloride C. P.	.32
4 lbs. ammonium hydrate	.70
1 oz. ammonium sulphate, pure cryst.	.07
1 oz. ammonium sulphate, pure cryst.	.05
1 oz. arsenous oxid	.10
2 lbs. barium chloride	.35
1 oz. barium nitrate C. P.	.23
1 oz. bromin	.20
1 oz. carmine	.35
1 lb. calcium carbonate (chips)	.08
1 oz. calcium chlorid, fused, white cakes	.07
1 oz. calcium nitrate C. P.	.07
1 lb. calcium oxid	.12
1 lb. carbon bisulphide, pure	.16
5 lbs. charcoal blocks	.20
1 lb. charcoal wood, powd.	$ 08
8 ozs. chloroform, pure	.26
1 oz. cobalt nitrate C. P.	.18
1 oz. cochineal powd.	.08
1 lb. copper sheet, thin	.40
1 oz. copper nitrate C. P.	.07
1 oz. copper oxid wire form	.12
1 oz. copper sulphate C. P.	.09
1 oz. glass wool, fine	.22
1 lb. hydrogen peroxide C. P.	.50
1 oz. iodine, pure	.26
1 lb. iron filing, clean, fine	.08
1 oz. iron ammonia, citrate	.13
1 lb. iron chlorid ($FeCl_3$)	.29
1 lb. iron sulphate (com'l)	.06
6 lbs. hydrochloric acid, C. P. Sp. Gr. 1.20	.72
1 lb. lead, shot No. 10	.14
1 lb. lead nitrate C. P.	.26

1 oz. litmus cubes	.06
½ qr. litmus paper, red	.40
½ qr. litmus paper, blue	.40
1 lb. logwood, ground	.08
1 oz. lithium nitrate	.16
1 lb. magnesium carbonate, pow'd	.24
1 oz. magnesium powder	.18
1 lb. manganese dioxide	.08
1 lb. mercury, redistilled	.88
8 ozs. mercury oxid, red	.68
1 oz. mercurous nitrate C. P.	.13
1 oz. mercuric nitrate C. P.	.14
1 oz. nickel nitrate C. P.	.11
7 lbs. nitric acid, C. P. Sp. Gr. 142	1.00
1 oz. oxalic acid, C. P. cryst	.05
1 oz. phenalphthalein	.30
2 ozs. phosphorous, yellow	.15
2 ozs. phosphorous, red	.15
1 oz. potassium bromid C. P.	.07
2 lbs. potassium chlorate, cryst	.32
1 lb. potassium ferricyanid, com'l	.63
1 oz. potassium ferorcyanid C. P.	$ 0.07
2 lbs. potassium hydroxid C. P.	.85
1 oz. potassium iodide, cryst	.25
1 lb. potassium nitrate, cryst	.12
1 oz. Potassium permanganate C. P.	.07
1 oz. pyrogallic acid, resumblimed	.18
1 oz. silver nitrate C. P. cryst	.60
1 oz. sodium metal	.15
1 lb. sodium bicarbonate	.06
1 lb. sodium biborate, powd	.15
1 lb. sodium carbonate, dry	.06
2 lbs. sodium hydroxid	.82
2 lbs. sodium hyposulphite	.13
1 lb. sodium nitrate cryst	.08
1 oz. strontium nitrate C. P.	.07
2 lbs. sulphur roll	.13
2 lbs. sulphur flowers	.13
9 lbs. sulphuric acid, Sp. Gr. 1.84 C. P.	.95

2	lbs. zinc, mossy	.30
1	lb. zinc dust	.15
1	lb. zinc nitrate C. P	.41
1	lb. zinc sticks C. P	.29
1	lb. zinc oxid	.56
1	lb. zinc sheet	.17

*BIOLOGY CLASS OF FIVE.

		Approximate Cost.
5	Barnes microscopes, TI	$11.25
1	BH2 compound microscope	30.15
1	hand microtome	5.40
1	section razor	1.80
5	dissecting pans	.95
50	glass slides	.36
100	cover glasses, 18 mm	.54
5	dissecting scissors	1.50
5	dissecting scalpels	.94
5	dissecting forceps	$ 1.50
10	dissecting needles	.19
50	test tubes, 150 x 18 mm	.75
1	ring on iron stands	.34
2	wire gauze, 100 mm. square	1.08
1	glass stirring rod	.05
2	evaporating dishes, 95 mm	.24
5	thistle tubes, 250 mm. long	.23
500	gm. glass tubing, 6 mm. outside	.30
1	hand balance, 200 mm. beam	1.50
1	alcohol lamp, brass, 200 cc	.15
2	flasks, 250 cc	.21
1	bone forceps	.87
1	cylinder graduate, 250 cc	.60
1	steam sterilizer, round, 215 x 185	3.15
6	petri dishes, 50 mm	.66
100	slide labels	.08
12	Syracuse watch glasses	.45
1	Bell jar, open top, 175 x 85 mm	.60

*Handbook No. 22, New York Department of Education.

REAGENTS, ETC.

1	lb. hydrochloric acid, C. P	.20
2	lbs. nitric acid, conc	.35
1	lb. ammonium hydrate	.25
1	oz. iodin, resublimed	.28
1	oz. potassium iodide, cryst	.25
1	lb. ether, Sp. Gr. 0.725	.80
1	lb. lime water	.16
1	lb. Fehling's solution, blue	.50
1	lb. Fehling's solution, white	.50
100	strips litmus paper, red	.08
100	strips litmus paper, blue	.08
2	lbs. alcohol, 95 per cent	1.02
1	oz. pancreatin	.21
1	oz. oxgall	.11
1	oz. pepsin powder	.15
1	lb. phosphate of lime, pure	.57
1	oz. grape sugar, anhydrous	.11
1	oz. easin	.60
1	lb. agar-agar, threads	.75
1	oz. peptone, American	$ 0.15
2	lbs. formalin, 40 per cent	.37
1	oz. phosphorous stick, red	.15
1	lb. sulphur flowers	.10
1	lb. chlorate of potash crystals	.18
1	lb. black oxide of manganese, powd	.08
1	lb. absorbent cotton	.40
1	lb. potassium permanganate	.18
1	tube 20 cc. of Canada balsam in xylol	.27

NAMES OF COMPANIES FURNISHING EQUIPMENT TO TEACH THE SCIENCES.

Eimer & Amend, New York City.
Columbia School Supply Company, Indianapolis, Ind.
Bausch & Lamb, Rochester, N. Y.
Queen & Co., Philadelphia, Pa.
Edward P. Martin & Co., Boston, Mass.
Keuffesl & Esser, New York, N. Y.

L. E. Knott Apparatus Company, Boston, Mass.
L. A. Murray & Co., Kilbourn, Wis.
Machinist Supply Company, Chicago, Ill.
C. H. Stoelting Co., Chicago, Ill.
E. P. Hall Supply Company, New York City.
Eberbach & Son, Ann Arbor, Mich.
Arthur W. Hall Co., Boston, Mass.
Central Scientific Co., Chicago, Ill.
Henry Heil Chemical Co., St. Louis.

OPENING EXERCISES.

Patriotic and devotional singing.

Simple talks upon the cultivation of observation, attention, memory, effective thinking, and habit forming, and the making of character.

Deal with common vice as destructive of working ability, social and moral influence. Avoid being suggestive, but be plain and sincere.

Teach the dignity and rewards of labor.

Studies in the elements of social and economic progress, success and failure, care of defectives, and reforms.

Simple lessons upon the interpretation of great pictures.

Observation of national holidays, the anniversaries of the birth of great men and women, also of historical events.

Study some of the world's great benefactors, but do not overlook the widow's mite.

Current Events.

Make use of daily papers.

SUBJECTS PRESCRIBED FOR ALL CANDIDATES FOR GRADUATION.

ENGLISH.

	Unit Value
First Year	1.0
Second Year	1.0
Third Year	1.0

MATHEMATICS.

Algebra:	
First year (½)	.5
Second year	1.0
Plane Geometry:	
Third year	1.0

SCIENCE.

Natural:	
First or second year, two half-year electives or one full-year elective	1.0
Physical:	
Third or fourth year elective	1.0

HISTORY OR A MODERN LANGUAGE.

Foreign:	
First, second, or third year elective	1.0
American and Civics:	
Fourth year	1.0
Total units prescribed for all	9.5

REGULAR COURSES.

Students completing any one of the following six courses are entitled to diplomas.

(NOTE—The Arabaic numerals represent the number of periods per week each subject is recited. The Roman numerals (I) (II) indicate first and second terms, respectively.)

LITERARY COURSE.

First Year—

	Periods Per Week.	Unit Value.
English	5	1.0
Botany and Agriculture	5	1
Arithmetic (I)	..	...
Algebra (II)	5	.5
Geography (I)-2	..	...
Grammar (I)-3	..	...
Zoology or Commercial Arithmetic (II)	5	.5
Music and Art	2	...
	22	

Second Year—

English	5	1
Algebra	5	1
Ancient History	5	1
Latin or Modern Language	5	1
Music and Art	2	...
	22	

Third Year—

English	5	1
Plane Geometry	5	1
Mediaevel and Modern History	5	1
Latin or Foreign Language	5	1
Music and Art	2	...
	22	

Fourth Year—

American History and Civics	5	1
English (I)	5	.5 or 1
Secondary Arithmetic or Solid Geometry (II)	5	.5 or 0
Latin or Foreign Language	5	1
Physics	5	1
Music and Art	2	...
	22	
Music and Art for four years (special teacher)	..	1.0

First Year— COMMERCIAL COURSE.

	Periods Per Week.	Unit Value.
English	5	1
Botany and Agriculture	5	1
Arithmetic (I)	..	...
Algebra (II)	5	.5
Geography (I)-2	..	...
Grammar (I)-3	..	...
Commercial Arithmetic (II)	5	.5
Music and Art	2	...
	22	

Second Year—

English	5	1
Algebra	5	1
Ancient History	5	1
Bookkeeping or Typewriting	5	...
Music and Art	2	...
	22	

Third Year—

English	5	1
Plane Geometry	5	1
Typewriting or Bookkeeping	5	...
Stenography (optional)	5	1
Foreign Language	5	1
Music and Art	2	...
	22	

(NOTE—If stenography is begun in the third year it should be continued through the fourth year.)

Fourth Year—

American History and Civics	5	1
Physics	5	1
Foreign Language	5	1
Economics (I)	5	.5
Commercial Geography or Com'l Law (II)	5	.5
Music and Art	2	...
	22	
Bookkeeping Course	..	1
Stenography	..	1.0
Typewriting Course	..	.5
Music and Art, four years, special teacher	..	1

ENGLISH.

GRAMMAR:

Smith "Our Language." First year, (I)-3. Reviewed. Fourth year, Rhetoric: Brooks and Hubbard. First, second and third years, two periods a week. Classics: All years, three periods a week.

HISTORY OF LITERATURE:

Tappan. Fourth year, two periods a week. Other years in hands of teacher only.

Spelling is to be a regular exercise throughout the course, words to be taken from the adopted text and from a list made up of those words commonly misspelt in other subjects. Ten minutes daily recitations are ample.

LITERATURE.

The selection of masterpieces for class study is based upon the college entrance requirements formulated and adopted by the four associations of colleges and preparatory schools of New England, the Middle States and Maryland, the North Central States, and the Southern States. Both prose and poetry are represented in each year. These units of literature are arranged with the view of their adaptation to the student's ability as well as to his interest. Greater ability is required for the comprehension of the masterpieces as the course progresses.

Considerable latitude is given in the selection of masterpieces for class study. Individual schools should be guided (1) by what students have read, (2) by what is most likely to appeal to the students' interest, (3) by what the teacher of English is most interested in and most competent to teach. An effort is made to give more than usual prominence to American literature, including Southern literature, in the lists for class study and for collateral reading.

METHOD.

The classics selected on the bases mentioned in the preceding paragraph should make it possible for a thorough intensive study of each. The amount of intensive study to be done will increase with the advancement of the students. A love and appreciation for literary content should always be the most important object

in such study. Literary forms, historical, biographical, and mythological allusions should receive only such attention as a clear understanding of the text requires. The unity of the masterpiece, the relation of the parts, and the general manner in which the author handles his material to develop his theme should be noticed. The student is not ready for any extended literary criticism. Comparisons of major and minor characters described in the classics studied should be made by the students. Discussions resulting from such comparisons can profitably be carried into the literary society for debates, even in the first year of the high school. Such discussions will add interest to the study of the classics and prepare the ground for an introductory study of argumentation in the second year and a more extended study of argumentation in the fourth year composition work. To enable students to get a general survey of the literary unit studied, a reading through aloud of the entire masterpiece by teacher and students should precede. There should follow a more careful reading of the larger subdivisions with the view of showing their relation to the masterpiece as a whole and to each other. Finally, a closer study of the paragraph, sentence, and meaning of words. Allusions, the life of the author, the literary setting of the masterpiece, and necessary references to the technique of grammar and rhetoric should be noticed. The study of the subject should require considerable time outside of the regular school hours.

History of Literature. Tappan's England's and America's Literature.

This subject will be studied only by those students who take the *Fourth Year English.* All are urged to take the full four-years in English.

Collateral Reading.

The suggested collateral reading aims at the arousal of a many-sided interest in literature. Assignments for collateral reading should be carefully followed up and students asked to make oral and written reports in class. *At least four books should be read outside of class each half year.*

MEMORIZING SELECTIONS OF PROSE AND POETRY.

Throughout the course there should be a systematic effort made to have students memorize choice portions of both prose and poetry. The portions to be memorized are to be selected by teacher and students. The possession of such portions of literature will enhance the student's appreciation of good literature and will aid his style of expression.

FORMAL GRAMMAR.

The study of formal grammar is completed. First year (I) Reviewed by those who take Fourth Year English. The text should be used constantly as a reference book and formal grammar should be emphasized in connection with the study of composition and rhetoric, the analysis of difficult passages in the masterpieces read, and in connection with the study of a foreign language.

COMPOSITION AND RHETORIC.

This subject is given two periods a week throughout the first three years. It may be reviewed the fourth year.

METHOD.

To secure freedom of expression, much practice should be given to oral narrations, descriptions, expositions, and debates. Let the student relate some interesting experience, report on some part of a book that appeals to him, tell in detail how to do something with which he is thoroughly familiar, argue for or against a proposition submitted to the class for discussion. Characters and practices mentioned in literature and history may be used for such discussions, but special precautions must be taken by the teacher to prevent wandering from the point at issue. As suggested on a previous page, some of these discussions may profitably be carried into the literary society.

Occasionally the student should be asked to appear before the class to deliver his narrative, description, exposition, or debate in a natural, impressive manner. Does he stick closely to the central point of his theme? Does every paragraph bear on the topic sentence in the paragraph? (The necessity for an outline is evident.) Do the parts of the sentences hang together closely? Do the words in the sentence express precisely what he

wants to say? (A systematic study of models, synonyms, and dictionary should be made to assist the student in the study of words and their exact meaning.)

There are two essential elements for good oral and written composition work: (1) The student's desire to tell something of value to others; (2) saying it in such a clear, coherent way that others hearing or seeing it cannot fail to get the point. To get the technical form of written compositions, much practice in taking dictations of models should be given during the first two years. One short written composition of about a page or page and a half, of laboratory size paper, should be the minimum weekly requirement throughout the course. A longer monthly theme, of from three to four pages in the first two years and five to six in the last two years, based on some subject in which the student is interested and has an accurate knowledge of the details, should be required throughout the entire course. Train the student early in making outlines, in criticising his own product through judgment of its logical coherence, clearness of meaning, and proportion of the parts of the composition. Get the student into the habit of reading his composition out loud and then criticising it by the way it sounds.

Vocabulary.

A systematic effort should be made to enlarge the student's vocabulary. The meaning of words may be understood by reading the context of a paragraph, but such words cannot be said to belong to the active use of one's vocabulary until the word is used frequently in oral and written expression. In the primary grades the pupil is taught and drilled upon one, two, or three words daily before he has in his possession the mechanical means to master the printed page. Why should not a similar practice prevail to some extent in the grammar and high school grades to give the student greater facility of expression?

Literary Society.

Bi-weekly or monthly meetings of the high school literary society offer an excellent opportunity for effective work in English. Regular class exercises in declamations of poetry and prose, essays typical of the narrative, descriptive, and expository forms

of composition, dramatizations of certain portions of masterpieces, orations and debates should be prepared for the program of the literary society. This would bring the literary society into closer touch with the regular work in English and would save most of the time that is frequently taken to prepare for such exercises.

Correlation of English Composition with Other Subjects.

The aim of the English teacher to have high school students learn to spell, punctuate, paragraph, speak and write correctly is defeated unless all of the teachers of the grades and of other high school subjects lay emphasis on the use of correct English. A lesson in mathematics may serve as excellent practice for correct diction in explaining a problem. Oral and written exercises in history can be used for the same purpose. Essays on certain topics in history ought to be substituted as part of the required work in composition. Well written translation of portions of Caesar's Gallic War or Cicero's Orations ought to be substituted in a similar manner. The experiments to be written out in physics and chemistry during the third and fourth years make possible the giving of excellent training in English composition. Every recitation, in whatever subject, ought to be a lesson in English. Such an attitude toward the subject on the part of all of the teachers in the high school and the occasional substitution of written work in subjects other than English would give motive to the student for the constant insistence on the importance of the subject of English. The practice of having students write for no other apparent reason than learning the technique of formal compositions, is pernicious in that it causes students to hate the subject, thus defeating the end aimed at. The teacher of English should occasionally collect the compositions written in other departments and make them the basis of practical class lessons in his subject. By doing this he will be the better able to suggest to his associate members on the faculty the necessity for uniform requirements in English in the written work submitted in every subject. Intelligent united efforts along this line would go far toward silencing the present criticism of instruction in formal English, the school

being charged with turning out continually individuals who cannot spell the commonest words, paragraph, punctuate or write correctly.

High School Library.

The high school library is an important factor in getting students interested in current events in reference books and in other books selected from the masters in literature. Daily, weekly or monthly papers and magazines create an interest in all forms of literature—scientific, historical, etc. An intelligent knowledge of how to use a dictionary, an encyclopedia or other reference books, is more important than the daily getting of lessons, although the latter, in many instances, requires the former. The teacher should be the guide to the library. Frequently he can get students to read a good book by reading out of it up to the point where the student's interest is sufficiently aroused to desire to take it out of the library. Knowledge obtained from the reading of library books can be used in the formal English work, it may contribute to the clearing up of difficulties in other subjects, or it may lead to a permanent interest in good books.

FIRST YEAR—FIRST HALF.

Literature.

The selection of masterpieces for class study should be determined (1) by what pupils have read, (2) by what is likely to appeal most to their interest, (3) by what the teacher of English is most interested in and most competent to teach.

The aim in literature during the first year should be to create and develop a taste for the best literature. The desire to read good library books is a reliable test of the interest awakened through class study of masterpieces.

For class study. Two periods a week. One from each group:

I. Franklin's Autobiography. (H. M. & Co.)
   Bunyan's The Pilgrim's Progress. (H. M. & Co.)

II. Lowell's The Vision of Sir Launfal. (Ainsworth & Co.)
   Goldsmith's Deserted Village. (H. M. & Co.)

Longfellow's The Courtship of Miles Standish. (H. M. & Co.)

Enoch Arden; Snow Bound.

Suggested for Collateral Reading:

1. Men of Greece—Hall.
2. Cuore—D'Amicis.
3. Enoch Arden—Tennyson.
4. The Man Without a Country—Hale.
5. Wonder Book—Hawthorne.
6. Westward Ho!—Kingsley.
7. Sketch Book—Irving.
8. The Other Wise Man—Van Dyke.
9. Robinson Crusoe—Defoe.
10. Gulliver's Travels—Swift.
11. Boys Who Became Famous Men—Skinner.
12. Life of Agassiz.
13. The Yemasse—Simms.
14. Horse-Shoe Robinson—Kennedy.

Composition and Rhetoric. *Adopted text:* Brooks and Hubbard's Composition-Rhetoric. *(Two Periods a Week.)*

To secure a facility of expression, oral as well as written composition should be emphasized. To give motive for writing compositions in the best form possible, the subject of letter writing should be taken up first. The necessity for correct capitalization, punctuation, spelling, indentation and paragraphing will be evident to the student. One short written composition, of about a page or a page and a half of laboratory size note paper, should be the minimum weekly requirement. A longer monthly theme, of from three to four pages, based on some subject in which the student is interested and has an accurate knowledge of the details should be required. The unity and coherence of content should be the larger concern to the teacher. Emphasize commendable points. Select one or more compositions of medium grade, containing errors made by the majority of students. The whole composition, or complete parts of the same, should be written on the board and then read and discussed in a helpful way. Let the students suggest and correct the errors, as far as this is possible. Work from unity of composition to unity of

paragraph; then, to unity and clearness of sentence structure; then, to grammar, punctuation, and spelling. Look for one thing at a time. As soon as possible, have the students correct their own compositions by exchanging papers. Avoid opportunities for collusion among the students by having them exchange papers with a different individual each time. After such correction, the teacher should collect the compositions and check them up to see if the necessary corrections have been made. Occasionally the teacher should look over all of the papers before students are asked to examine and correct their mistakes. Such oversight will enable the teacher to know the powers and progress of his students and will stimulate them to put forth their best efforts. The longer monthly compositions and the better short compositions should be filed in a permanent note-book. Much individual aid and guidance should be given the weaker students in learning to appreciate models, to make outlines, and to express themselves clearly and coherently. Have frequent practice in taking dictations of models selected from the adopted text or from the literature that is being read. Also have students write paragraphs in class on some familiar subject. Emphasize narration, but introduce description and exposition.

GRAMMAR. *Adopted Text:* Smith's Our Language Grammar. (I)-3.

Finish the book, dwelling on the principles in which the children are most deficient.

SPELLING.

Words misspelt in other subjects or taken from adopted text. Ten minutes daily.

Spelling continues through the four years.

Adopted Text: Mayne's Business Speller.

Selections to Be Memorized: Prose and Poetry.

FIRST YEAR—SECOND HALF.

LITERATURE. *(Two Periods a Week.)*

For class study. One from each of the following groups:

I. Hawthorne's House of Seven Gables. (H. M. & Co.)
   Irving's Sketch Book. (H. M. & Co.)
   Dickens' A Tale of Two Cities. (H. M. & Co.)

II. Scott's Lady of the Lake. (Ainsworth & Co.)
Poe's Poems. (H. M. & Co.)
Tennyson's Gareth and Lynette, Lancelot and Elaine, and The Passing of Arthur. (H. M. & Co.)
Great Stone Face.

Suggested for Collateral Reading:

1. Ivanhoe—Scott.
2. The Silver Christ—Ouida.
3. Jungle Book, I and II—Kipling.
4. Don Quixote—Cervantes.
5. Dickens' History of England.
6. My Study Window—Lowell.
7. Birds and Bees—Burroughs.
8. Memorabilia—Xenophon.
9. Apology of Socrates—Plato.
10. Private Life of the Romans—Preston and Dodge.
11. Greek Heroes—Kingsley.
12. Gold Foil—Holland.
13. Swallow Barn—Kennedy.
14. To Have and to Hold—Mary Johnston.

SECOND YEAR—FIRST HALF.

LITERATURE. *(Two Periods a Week.)*

The aim of literature in the second year should be more intensive than in the first year. From an appreciation of the masterpiece students should be trained to analyze the classic for its unity, mass, and coherence.

For class study. One from each group:

I. Scott's Ivanhoe. (Ginn & Co.)
Addison's The Sir Roger de Coverly Papers in Spectator. (Ainsworth & Co.)

II. Shakespeare's As You Like It; Merchant of Venice; Henry V. (Ginn & Co.)
Lays of Ancient Rome.
Last of the Mohicans.

Suggested for Collateral Reading:

1. Translation from the Iliad (Books I, VI, XXII, XXIV) —Pope.
2. Twice Told Tales—Hawthorne.
3. Kenilworth—Scott.
4. The Struggle for a Continent—Parkman.
5. Young Folks' Plutarch—Ginn.
6. Being a Boy—Warner.
7. Innocents Abroad—Mark Twain.
8. The Last Days of Pompeii—Lytton.
9. Ben Hur—Wallace.
10. Treasure Island—Stevenson.
11. Odyssey—Homer.
12. Shakespeare the Boy—Rolfe.
13. Poe's Tales.
14. In Old Virginia—Page.

SECOND YEAR—SECOND HALF.

LITERATURE. *(Two Periods a Week.)*

For class study. One for each group:

I. Scott's Quentin Durward. (Macmillan Co.)
Bacon's Essays. (Macmillan Co.)
Mrs. Gaskill's Cranford. (Macmillan Co.)

II. Palgrave's Golden Treasury (first series), books II and III, with special attention to Dryden, Collins, Gray, Cowper, and Burns. (Macmillan Co.)
Arnold's Sohrab and Rustum. (Ainsworth & Co.)
Pope's The Rape of the Lock. (Macmillan Co.)
Vicar of Wakefield.

Suggested for Collateral Reading:

1. Marmion—Scott.
2. Kidnapped—Stevenson.
3. Tom Brown at Rugby—Hughes.
4. Rienzi—Lytton.
5. Beside the Bonnie Brier Bush—Maclaren.
6. Tales of a Traveler—Irving.
7. Two Years Before the Mast—Dana.

8. Rab and His Friends—Dr. John Brown.
9. Brave Little Holland—Griffis.
10. Sharp Eyes—Burroughs.
11. Girls and Women—Chester.
12. Betty Alden—Austen.
13. Surry of Eagle's Nest—Cooke
14. Mohum—Cooke.
15. The New South—Grady.

THIRD YEAR—FIRST HALF.

LITERATURE.

One from each group.

I. De Quincey's Joan of Arc and the English Mail Coach. (H. M. & Co.)
Macaulay's Life of Johnson. (H. M. & Co.)
Goldsmith's Vicar of Wakefield. (H. M. & Co.)

II. Shakespeare's Julius Cæsar; Twelfth Night. (H. M. & Co.)
Milton's Minor Poems. (Ainsworth & Co.)
Idyls of the King.
Sesame and Lilies.

Suggested for Collateral Reading:

1. The Newcomes—Thackeray.
2. The Autocrat of the Breakfast Table—Holmes.
3. Our Old Home—Hawthorne.
4. The Choir Invisible—Allen.
5. Snow Bound—Whittier.
6. Adam Bede—Eliot.
7. Locksley Hall—Tennyson.
8. Henry VIII—Shakespeare.
9. Virginibusque Puerisque—Stevenson.
10. Quo Vadis—Sienkiewicz.
11. Opium Eater—DeQuincey.
12. Washington and His Country—Irving and Fiske.
13. Essays—Emerson.
14. Half Hours in Southern History—Hall.
15. The Prophet of the Great Smoky Mountains—Craddock.

THIRD YEAR—SECOND HALF.

LITERATURE.

One from each group.

I. George Eliot's Silas Marner. (H. M. & Co.)
*Carlyle's Essay on Burns. (Ainsworth & Co.)

II. Palgrave's Golden Treasury (first series), book IV, with special attention to Wordsworth, Keats, Shelley, and Byron. (H. M. & Co.)
*Washington's Farewell Address and Webster's First Bunker Hill Oration. (H. M. & Co.)

Suggested for Collateral Reading:

1. True Story of Paul Revere—Gettemy.
2. Transit of Civilization—Eggleston.
3. Winning of the West—Roosevelt.
4. Commemoration Ode—Lowell.
5. In Memoriam—Tennyson.
6. The Hoosier Schoolmaster—Eggleston.
7. Cotter's Saturday Night—Burns.
8. The Story of a Bad Boy—Aldrich.
9. My Summer in a Garden—Warner.
10. Les Miserables—Hugo.
11. Uncle Remus, His Songs and Sayings—Harris.
12. Nights with Uncle Remus—Harris.
13. Red Rock—Page.

FOURTH YEAR—COURSE IN ENGLISH.

A. Themes, Outlines, Masterpieces. I Term.

B. Review Grammar. Study of History of Literature. I Term.

A. and B. Term I and II.

*Required reading for college entrance.

FOURTH YEAR—FIRST HALF.

LITERATURE.

One from each group.

I. *Burke's speech on Conciliation with America. (D. Appleton & Co.)

II. *Shakespeare's Macbeth. (D. Appleton & Co.)

For Collateral Reading:

1. Egyptian Princess—Ebers.
2. Peasant and Prince—Martineau.
3. Roman Life in the Days of Cicero—Church.
4. How the Other Half Lives—Riis.
5. Hero Tales from American History—Roosevelt and Lodge.
6. Intellectual Life—Hamerton.
7. Prue and I—Curtis.
8. Romola—Eliot.
9. Vanity Fair—Thackeray.
10. Paradise Lost, Books I and II—Milton.
11. Poets of the South—Painter.
12. Col. Carter of Cartersville—Smith, F. H.
13. New Orleans: The Place and the People—King.

FOURTH YEAR.

LITERATURE. *(Two Periods a Week.)*

Adopted Text: Tappan's English and American Literature.

Formal study of text-book in English and American literature. In connection with the study of an author's life, review the masterpiece or masterpieces read in class and assigned for collateral reading.

Make a more intensive study of the representative author of a period and group the other authors belonging to the same period about such author. Literary movements should be studied rather than individual authors. Review the passages memorized in the preceding intensive study of masterpieces.

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*Required reading for college entrance examinations.

REFERENCE BOOKS.

1. Chubb's Teaching of English.
   Macmillan Co., New York.
2. Carpenter, Baker and Scott's Teaching of English.
   Longmans, Green & Co., New York.
3. McMurry's Reading of English Classics.
   Macmillan & Co., New York.
4. Laurie's Language and Linguistic Method.
   Macmillan & Co., New York.
5. Report of Committee of Ten.
   American Book Co., Cincinnati, Ohio.
6. Report of the Committee on College Entrance Requirements.
   D. W. Springer, Secretary of N. E. A., Ann Arbor, Mich.
7. Webster's Elementary Composition.
   Houghton Mifflin & Co., Boston, Mass.

LATIN.

GENERAL STATEMENT.

The course in Latin extends over a period of three years, beginning with the second year and continuating throughout the remainder of the high school course, five periods a week.

FIRST YEAR LATIN.

Adopted Text: Gunnison and Harley. Firt Year Latin.

FIRST YEAR.

The work in Latin for the first year covers the elementary, or preparatory material. This is the most important period in the study of this subject. During this time, first year Latin and elementary Latin composition are to be mastered thoroughly. If this is accomplished, a large part of the Latin grammar will be in the student's possession. The mastery and enjoyment of Cæsar and Cicero will be possible. Accurate knowledge of forms syntax, and vocabulary is an absolute necessity. Forms, principles of syntax, and vocabulary must be memorized and drilled upon until they are as familiar as the alphabet or the multiplication table. Accuracy in Latin makes interest possible. No one

but a competent teacher of Latin should undertake this foundation work.

FORMS.

The inflections found in the different declensions and conjugations must be thoroughly familiar before substantial progress can be made. Case endings, tense signs, and personal verb endings can be recognized only by close observation and constant drill. Frequent oral and written tests are necessary to fix these forms in memory.

PRONUNCIATION.

The Latin pronunciation is preferred. A great deal of oral practice is necessary to familiarize students with such pronunciation.

SYNTAX.

Principles of syntax learned in English grammar should be employed constantly to re-enforce corresponding constructions in Latin. The learning and application of principles of syntax found in Latin can and should be made an invaluable aid in learning and applying technical English grammar.

PROSE.

There should be daily practice in translating easy English sentences into Latin. Translations from English into Latin are much better tests of the student's knowledge of vocabulary, forms and syntax than translations from Latin into English. The greater emphasis should therefore be placed on this kind of translation. Too frequently this method, on account of its difficulty, is neglected altogether.

Variety should characterize the testing, oral and written, of what has preceded.

At first, students should be trained to verify their work by means of the book and then gradually to discard the book and rely very largely on the accuracy of their knowledge.

VOCABULARY.

A systematic effort to build up a vocabulary should be made from the beginning. A certain number of Latin words should

be committed to memory regularly and there should be frequent drill on those learned previously. For the sake of interest and for the sake of having a comprehensive basis for subsequent reading there should be sufficient variety and copiousness in the vocabulary of the elementary course. Seven or eight hundred words, exclusive of proper names, in the possession of the pupil for ready use are ample.

TRANSLATION.

The student should be taught early how to get the thought from the Latin order of words before translating. Careful oral and silent reading of the Latin will aid the student in becoming accustomed to this mode of expression. Discrimination of synonyms and idioms must be insisted on from the beginning to get the best English translation. In most instances, English words similar in form to the Latin should not be accepted. The primary aim in translating Latin into English is not mere thought-getting, but getting "the most discriminating interpretation of the passage in hand as language and literature." Sharp, definite, specific translations of Latin phrases and sentences create effective habits of correct thinking and expression. Detached sentences should constitute the earliest practice in translation. As the student's knowledge of Latin construction increases, the complexity of the sentences to be translated should increase.

REVIEWS.

Too much stress can not be laid upon the necessity of frequent oral and written reviews. Opportunities to test must be made. The superficial getting of daily lessons will not answer. A student either knows or does not know what he has been studying. There is no middle ground. Upon the thoroughness with which the elementary work in Latin is done depends the quality of the work in Cæsar and Cicero.

SECOND YEAR.

Adopted Text: Gunnison and Harley, Cæsar.

Before taking up Cæsar, the vocabulary forms, and principles learned in the elementary work should first be reviewed. Three weeks or a month should be devoted to such review.

Amount to Be Read.

Any four books of Cæsar's Gallic War, preferably the first four, are recommended as a minimum requirement. The order in which the books are read may be changed. Some teachers prefer to read Books II and III first on account of their greater simplicity.

Translation.

The student should now have greater ability to get the thought of the author in the Latin sentence order before translating. A literal translation should be encouraged to show student's knowledge of constructions. Then the best idiomatic English should be required. For the student's guidance in method of attack and manner of rendering in the best English, the teacher should occasionally translate some sentence in the lesson or some other passage in Cæsar. A loose Latin sentence oftentimes requires several short English sentences to express the same thought. To get the unity of the narrative the teacher should read aloud to the class a translation of the work previously covered.

Translation at Sight.

To secure greater facility in getting the thought from the Latin sentence order and expressing the same in genuine English, translations at sight of a portion of the lesson for the following day or some portion of a book not prescribed for regular class study are helpful. Care should be taken to avoid the selection of too difficult Latin for this purpose.

Correlation.

Occasionally, the translation of a chapter, or a portion of a chapter, illustrative of a unit in narration, description, or exposition, should be written out carefully by the class to serve as part of the composition work in English for the second year.

Setting.

Before taking up the narrative of the Gallic War its biographical, historical, and geographical setting should be traced in reference books and on maps. All references in the text to these different phases should be looked up by the pupils.

Study the Roman military system and discuss its means and methods of operation with the class. Students will be interested in Cæsar's motives, the method and success of his plans. Sidelights on Celtic, Gallic, and Roman institutions add interest to the narrative.

THIRD YEAR.

Adopted Text:. Gunnison and Harley, Cicero.

A careful and thorough review of the work of previous years with special emphasis on such portions having more direct bearing on Cicero's Orations, should be given during the first three or four weeks of the year.

FORMAL WORK.

Systematic work in Latin grammar (regularly assigned lessons), prose compositions (one period a week), and sight translations, as recommended for the second year, should be continued.

AMOUNT TO BE READ.

A minimum requirement of six books, including the first four Orations against Catiline, is recommended.

SETTING.

A study of this period of Roman history is essential. The struggle between the aristocracy and the forces of the Republic must be understood before the student can properly appreciate Cicero and his Orations. Cicero's antecedents, his life, training and environments are appropriate subjects of investigation, study, and discussion. The workings of the Roman constitution, the functions of public officials, and legislative bodies may well be made subjects of study. The student should know the meaning of such terms as consul, prætor, ædile, censor, tribune, quæstor, Comitia Centuriata, Comitia Tributa, and Concilium Plebis.

CORRELATION.

Discussions of Cicero's position in the social and political struggle of his time, the just or unjust position of the patrician class vs. the plebeian class, or vice versa, can and should be correlated with the fourth year work in English. No better material for argumentation can be found. The literary value of Cicero's Orations as models of style, proportion, and unity should be studied.

The interest aroused by such a many-sided study of the author and his works will more than outweigh the irksomeness of a mere formal and mechanical study of Cicero's Orations.

MODERN FOREIGN LANGUAGES.

FRENCH, GERMAN, SPANISH.

Three years of French or German are provided in the Literary Course, elective with Latin, beginning with the second high school year and continuing throughout the course five periods a week.

A large variety of classics is offered in French and German to meet the needs of individual schools, and affords opportunity for choice in the selection of text.

A ready speaking knowledge of the modern foreign languages taught is an invaluable asset to the teacher. In French-speaking communities it is all the more necessary for the teacher of French to know the vernacular correctly.

The paragraphs on *aim of the instruction* and *work to be done* are quoted from Report of the Committee of Twelve.

FRENCH.

Elementary French.

The Aim of the Instruction.—At the end of the elementary course the pupil should be able to pronounce French accurately, to read at sight easy French prose, to put into French simple English sentences taken from the language of every-day life or based upon a portion of the French text read, and to answer questions on the rudiments of the grammar as defined below.

The Work to Be Done.—During the first year the work should comprise:

1. Carefull drill in pronunciation.

2. The rudiments of grammar, including the inflection of the regular and the more common irregular verbs, the plural nouns, the inflection of adjectives, participles and pronouns; the use of personal pronouns, common adverbs, prepositions, and conjunctions; the order of words in the sentence, and the elementary rules of syntax.

3. Abundant easy exercises, designed not only to fix in the memory the forms and principles of grammar, but also to cultivate readiness in the reproduction of natural forms of expression.

4. The reading of from 100 to 175 duodecimo pages of graduated texts, with constant practice in translating into French easy variations of the sentences read (the teacher giving the English) and in reproducing from memory sentences previously read.

5. Writing French from dictation.

During the second year the work should comprise:

1. The reading of from 250 to 400 pages of easy modern prose in the form of stories, plays, or historical or biographical sketches.

2. Constant practice, as in the previous year, in translating into French easy variations upon the texts read.

3. Frequent abstracts, sometimes oral and sometimes written, of portions of the text already read.

4. Writing French from dictation.

5. Continued drill upon the rudiments of grammar, with constant application in the construction of sentences.

6. Mastery of the forms and uses of pronouns, pronomial adjectives, of all but the rare irregular verb forms, and of the simpler uses of the conditional and subjunctive.

Adopted texts for the first two years:

Chardenal's Compete French Course, Revised Edition.—Suggested.

Allyn & Bacon, Chicago, Ill.

Francois' Introductory French Prose Composition.

American Book Co., Cincinnati, Ohio.

Classics:

About—Le roi des montagnes. (Heath & Co.)
Bacon—Une Semaine a'Paris. (A. B. Co.)
Daudet (Super).—La petit Chose. (H. & Co.)
Foncin—Le pays de France. (A. B. Co.)
Guerber—Contes et legendes. (A. B. Co.)
Halevy (Logie)—L'Abbe Constantin. (H. & Co.)
Hugo—Hernani; La Chute. (A. B. Co.)
Labiche & Martin—Le poudre aux yeux. (A. B. Co.)
Labiche & Martin—Le voyage de M. Perrichon. (H. & Co.)

LaBrete—Mon oncle et mon cure. (H. & Co.)
Merimee—Columba. (A. B. Co.)
Sandeau—Mademoiselle de la Seigliere. (A. B. Co.)

INTERMEDIATE FRENCH.

The Aim of the Instruction.—At the end of the intermediate course the pupil should be able to read at sight ordinary French prose or simple poetry, to translate into French a connected passage of English based on the text read, and to answer questions involving a more thorough knowledge of syntax than is expected in the elementary course.

The Work to Be Done.—This should comprise the reading of from 400 to 600 pages of French of ordinary difficulty, a portion to be in the dramatic form; constant practice in giving French paraphrases, abstracts or reproduction from memory of selected portions of the matter read; the study of a grammar of moderate completeness; writing from dictation.

Adopted Texts for Third Year Are:

Fraser & Squair's French Grammar.
Heath & Co., Atlanta.

Classics:

Augier and Sandeau—Le gendre de M. Poirier. (A. B. Co.)
Corneille—Le Cid. (A. B. Co.)
Daudet—Tartarin de Tarascon. (A. B. Co.)
Dumas—Le chevalier de maison rouge. (A. B. Co.)
Fortier—Sept grandes auteurs. (H. & Co.)
Fortier—Le historie de France. (Macmillan & Co.)
Fortier—Napoleon. (Ginn & Co.)
La Fontaine—Fables. (Ginn & Co.)
La Fontaine—Deuze contes nouveaux. (A. B. Co.)
Healy—Comedie classique. (A. B. Co.)
Moliere—Lavare, le bourgeois gentilhomme. (A. B. Co.)
Racine—Athalie. (H. & Co.)
Madame Therese. (Ginn & Co.)

Reference Books:

James-Mole—French-English Dictionary. (Macmillan Co., Atlanta.)

Report of the Committee of Twelve of the Modern Language Association. (Heath & Co., Atlanta.)

Lectures Primoires—By E. Touty, Troisieme Edition.

Comptoir General de la Librairie Francaise, 613 Royal St., New Orleans.

Dixieme Livre de Grammaire—Claude Auge.

Troisieme Livre de Grammaire—Claude Auge.

The foregoing list is recommended for schools where teachers and pupils speak French.

MATHEMATICS.

ARITHMETIC.

First Year (I)-5. Five Periods a Week.

Texts: Nicholson's Grammar School Arithmetic; Brooks' New Mental Arithmetic.

1. Brief review of percentage and applications bringing in new material.

2. Powers and roots.

3. Telling children certain historical facts connected with the development of the science of arithmetic secures interest that cannot be secured in any other way.

4. For instance, in teaching that in a right triangle $A^2+B^2=C^2$ the class could be told that the Egyptians in the orientation of their temples, 2500 B. C., used a rope, ABCD, divided by knots so that the lengths AB, BC, and CD were in the ratio 3:4:5. This rope could be made.

5. Mensuration reviewed before taking up the work in this grade.

6. The formulation and its use now predominate.

7. Ability to recover the formula if lost should be insisted upon.

8. Lead to the algebraic equation from the equation in arithmetic.

9. At least half of the time allotted to arithmetic should be devoted to the solution of problems in the mental arithmetic by oral analysis.

The following syllabus is based upon the recommendations of the American Mathematical Society, formulated at a meeting of that body in September, 1902. Since that time these recommendations have been adopted by the College Entrance Examination Board.

ALGEBRA.

First Year (II)-5 Second Year (I) (II)-5.

Some points for consideration in the teaching of algebra:

1. Show the relation of algebra to arithmetic. The similarity between the literal notation of algebra and the numerical notation of arithmetic should be noticed. Whenever possible, problems in algebra should be proved by giving letters numerical values. Such accuracy will show the necessity for exact manipulation of signs, parentheses, brackets, braces, etc. Steady progress in the subject will result from the insistence on these points.

2. The thorough understanding of every new step in the subject. The student should see clearly the reason for the process. Make haste slowly.

3. Develop the new step by means of a typical example. Oral work consisting of simple data involving the principle. Drill.

4. Assign home work *to drill on the operations whose theory is understood,* using problems other than those given in class. Insist on neatness and accuracy.

5. Selection of problems from interest, mensuration, practical life, and the physical sciences. Have pupils offer problems.

6. Much board work to enable teacher to see whether pupils have grasped the central idea. Avoid possibility of copying by having the weaker as well as the stronger student explain the process.

7. Training, by constant practice, to formulate and express definitions in clear, exact language.

FIRST YEAR.

(Second half of the first high school year to second half of the second year.)

To Quadratics.

The four fundamental operations for rational algebraic expressions; factoring, determination of the highest common factor and lowest common multiple by factoring (avoid unnecessarily involved problems); fractions, including complex fractions, ratio and proportion (most of this work should take the form of the equation); linear equations, both numerical and literal, containing one or more unknown quantities; problems depending on linear equations (see No. 5 under "Some points for consideration," etc.); radicals, including the extraction of the square root of polynomials and of numbers; exponents, including the fractional and negative.

SECOND HALF OF SECOND YEAR.

Quadratics, Binomial Theorem, and Progressions.

Simple cases of equations with one or more unknown quantities that can be solved by the methods of linear or quadratic equations. Make practical applications from the outset. Have pupils make some of the problems.

Problems depending upon quadratic equations. See note No. 4 under "Some points for consideration," etc.

The binomial theorem for positive integral exponents.

The formulas for the nth term and the sum of the terms of arithmetic and geometric expressions, with applications.

Work in making graphs.

PLANE GEOMETRY.

Third high school year, 5 periods a week.

Adopted Text: Wentworth's Plane Geometry.

SUGGESTIONS.

1. Show the relation to plane surfaces as treated in arithmetic. The necessity for using algebraic expressions.

2. Have pupils change the order of letters in figures to avoid memorizing the figures. Have occasional recitations without proof written out.

3. Correlate the subject with appropriate designs constructed in the subject of mechanical drawing.

4. Have pupils memorize accurately the language of theorems and corollaries after understanding them. Review these frequently.

5. Wherever possible, have pupils make their own geometric forms by cutting them out of pasteboard or ordinary paper. The use of such forms will serve as aids to get and to keep the image more clearly.

CONTENT.

The theorems and constructions of the text-book, including the general properties of plane rectilinear figures; the circle and the measurement of angles; similar polygons; areas; regular polygons and the measurement of the circle.

The solution of numerous original exercises, including loci problems. As a rule, half of the year's work should be placed on getting thoroughly the theorems, corollaries, and "originals" found in the first two books.

Application to the mensuration of line and plane surfaces. Use problems in "earth measurements" and other practical problems drawn from the student's environment of home and school.

SOLID GEOMETRY, OR TRIGONOMETRY.

Solid Geometry.

Adopted Text: Wentworth's Solid Geometry.

Theorems and constructions found in the adopted text-book, including the relations of planes and lines in space; the properties and measurements of prisms, pyramids, cylinders, and cones; the sphere and spherical triangle.

The solution of numerous original exercises, including loci problems. Omit proofs of incommensurable cases in limits.

Applications to the mensuration of surfaces and solids. Use large slated globes for demonstration purposes and smaller slated globes for individuals in the class. Have students make their own models for other solids.

TRIGONOMETRY.

Adopted Text: Nicholson's Plane and Spherical Trigonometry, with Tables.

Definitions and relations of the six trigonometric functions as ratios. Review of the right triangle in plane geometry. Circular measurement of angles.

The similarity between the theory and use of logarithms and exponents in algebra.

Proofs of principal formulas, in particular for the sine, cosine, and tangent of the sum and difference of two angles, and tangent of the sum and difference of two angles, of the double angle and half the double angle, the product expressions for the sums or the difference of two sines or two cosines, etc.; the transformation of trigonometric expressions by means of these formulas.

Solutions of trigonometric equations of a simple character.

REFERENCE BOOKS.

1. Young. The Teaching of Mathematics.
   Longmans, Green & Co., New York.
2. Smith. The Teaching of Elementary Mathematics.
   The Macmillan Co., New York.
3. De Morgan. On the Study and Difficulties of Mathematics.
   Open Court, Chicago.
4. Castle. Manual of Practical Mathematics.
   The Macmillan Co., New York.
5. Row. Geometric Paper Folding.
   Open Court, Chicago.
6. Report of American Mathematics Society, Sept., 1902.
   Mathematical Gazette. (Can be ordered from Baker, Taylor & Co.,, New York.)

7. Report of the Committee of Ten.
   American Book Co., New York.
8. Young and Jackson's Algebra.
   D. Appleton & Co., Chicago.

SCIENCES.

BOTANY AND AGRICULTURE.

Adopted Text: Andrew's Botany All the Year Round, and one of the four adopted books in Agriculture.

The course covers the first year in the high school, five periods weekly. The topics and experiments selected should be the most typical.

The method of keeping note-books, making observations, and performing experiments is similar to the method of laboratory work in the other inductive sciences. Each experiment will naturally submit to complete explanation under the four heads: (1) Object; (2) description of experiment and drawing of apparatus and plant or parts of plants; (3) results; (4) conclusion.

The records made in the laboratory will furnish the basis for the complete notes to be written up afterwards. Teachers and pupils will find the loose-leafed note-book most convenient. It will permit any necessary insertions and the teacher can keep the notes of all pupils checked up to date. The work in drawing should be correlative with botany by having pupils make accurate graphic sketches of botanical forms.

SUGGESTIVE FORM FOR WRITING OUT EXPERIMENTS.

For a model experiment we may take the first one given by the author on page 15.

Object: To determine whether or not leaves give off moisture.

Method: "Dry two self-sealing jars thoroughly, by holding them over a stove or a lighted lamp for a short time to prevent their 'sweating.' Place in one a freshly cut leafy sprig of any kind, leaving the other empty. Seal both jars and set them in the shade. Place beside them, but without covering of any kind, a twig similar to the one in the jar. Both twigs should have been

cut at the same time, and their cut ends covered with wax or vaseline, to prevent access of air. At the end of six or eight hours look to see if there is any moisture deposited on the inside of the jar. If there is none, set them both in a refrigerator or other cool place for half an hour, and then examine them again."

Results: In the jar containing the leafy sprig there is a deposit of dew inside the glass, while there is none in the empty jar (or at least it is smaller). The leaves inside the jar are only moderately wilted, while those outside are very badly wilted and withered.

Conclusion: (1) Moisture is evaporated from leaves. (2) The amount of moisture given off depends upon the amount of moisture in the surrounding air, being less in the jar, where the air sooner becomes saturated than in the open air, where the breezes keep replacing the air continually, so that it has no opportunity to become loaded with moisture.

The general principles of anatomy, morphology, physiology, and taxonomy of plants should emerge from the study of botany. It is not possible nor desirable to separate these divisions of the subject in the complete treatment of any one.

In the study of the subject follow the order of plant development. Begin with "seeds and seedlings," page 87, completing Chapter IV, then go back to Chapter II and follow the order given in the book except that Chapter III should follow Chapter VII or accompany it.

The teacher will find that the different subdivisions of physiology are taken up in connection with the parts of the plant in which these phenomena are most apparent. Thus, for example, transporation, respiration, and photosynthesis are taken up in connection with the study of the leaf in Chapter II although all these phenomena are found in all green parts of all green plants.

Study modifications of parts of plants for special functions, the methods of propagation, dissemination, cross-pollination, etc.

Some attention should be given to the classification of plants into families, genera, and species. Pupils should be led to recog-

nize the important groups of plants: Algæ, fungi, lichens, bryophytes, pteriodophytes, gymnosperms, and angiosperms.

Ten experimental dealings with an intensive study of the seed, root, shoot, bud, flower, and fruit constitute the minimum requirements, but no school is limited to this number.

Small magnifiers, dissecting needles, forceps, and scalpels are the most necessary parts of a student's outfit. A compound microscope and a more elaborate set of instruments are of use to the teacher and should be made use of in order to show the pupils some of the structures mentioned in the text. See pages 12 and 13 in text for other appliances.

Wherever possible, the student should be given field work in botany to accompany experiments made in boxes kept in the school room. To supplement the text, especially in the experimental work, teachers are referred to the detailed syllabus on agricultural botany.

For an extended list of helpful reference books, see page 289 and the pages following.

1. Lloyd & Bigelow's The Teaching of Biology.
   Longmans, Green & Co., New York, N. Y.

2. Hodge's Nature Study and Life.
   Ginn & Co., Atlanta, Ga.

3. Coulter's Text-Book of Botany for Secondary Schools.
   Appleton & Co., Chicago, Ill.

4. Strasburger, Noll, Schenk and Karsten's Text-Book of Botany.
   Macmillan & Co., New York, N. Y.

5. Small's Flora of the Southwestern United States.
   J. K. Small (N. Y. Bot. Garden), New York, N. Y.

6. Bergen's Text-Book of Botany.
   Ginn & Co., Atlanta, Ga.

SUGGESTIVE EXPERIMENTS AND EXERCISES IN BOTANY.

SEEDS.

1. Testing the vitality of seeds. 2. Study of seed structure: bean corn, cotton. 3. Testing seeds for starch, proteids, fats, and oils. 4. Proportion of liquids, gases, and solids in seeds. 5. Composition of starch.

GERMINATION.

1. Time required for germination of different kinds of seeds. 2. Germinating seeds give off CO_2 and heat. 3. Pressure of gas in sprouting seed. 4. Amount of moisture requisite for germination. 5. Study of parts of germinating seed.

SEEDLING.

1. Seedling of monocotyledon and dicotyledon. 2. Direction and rate of plant growth; geotropism.

ROOTS.

1. Roots shun light and seek water. 2. Drainage aids plant growth. 3. Roots take up food in solution. 4. Osmosis and osmotic pressure. 5. Structure of various kinds of roots. 6. Method of growth of roots. 7. Form and function of root hairs. 8. Course of sap through roots.

STEMS.

1. The structure of various kinds of stems. 2. The course of sap through stems. 3. Percent of carbon in a tree. 4. Structure and growth of buds. 5. Modes of branching. 6. Woody growth, function, and structure.

LEAVES.

1. Transpiration of leaves, and study of stomata. 2. Leaves purify the atmosphere. 3. Heliotropism. 4. Photosynthesis, chlorophyll and starch. 5. Venation and leaf structure. 6. Adjustment for light and air. 7. The parts of the leaf.

FLOWERS.

1. The parts of the flower. 2. Comparison of typical flowers. 3. Pollination. 4. Cross fertilization.

FRUIT.

1. The uses of the rind. 2. Examination and comparison of (a) pome, (b) pepo, (c) berry, (d) drupe. 3. Seed dispersal.

ZOOLOGY, INCLUDING HUMAN PHYSIOLOGY.

Text-Books:

Herrick's Text-Book in General Zoology and Ritchie's Human Physiology.

Zoology. First Year, (I)-5. Physiology. Second Year (II)-5.

The general principles of zoology should be derived from the study of the typical animal families found in the locality of the school and neighborhood. Make an intensive study of the best and most available representative types peculiar to the locality. The choice of these types should be distributed among different classes of protozoa, porifera, cœlenterata, annulata, echinoderms, Mollusca, insects, fishes, amphibia, reptiles, birds, and mammals. In nearly every instance where the example selected in the text is not available, it will not be difficult to find another specimen belonging to the same class. The type studied should become the basis for classifying all forms belonging to the same family.

Habits of life, adaptation to environment, and the economic value of different forms of animal life should be studied.

There should be an intensive study of the physiology, including human physiology, of the types selected, involving the essentials of digestion, absorption, circulation, respiration, secretion, excretion, nervous function, and cell-metalbolism. The physiology of the lower forms of animal life will prepare the pupil for a better understanding of human physiology.

At least half of the time devoted to the study of zoology should consist of practical laboratory exercises. The note-books written up should contain outline drawings of the chief structures studied and full explanations of the drawings and the experi-

ments made. The work in drawing for the second high school year is planned with special reference to aid the work in zoology. (See syllabus in drawing for second high school year.) A minimum of fifteen exercises or experiments is required for the note-books to be submitted. Herrick's Laboratory Manual in Zoology is recommended to teachers as the guide-book for the laboratory work in zoology. The equipment in zoology is similar to the equipment in botany. See syllabus in botany.

The course in physiology is intended to make the pupil familiar with the general physiology of the human body and to acquaint him especially with importance of proper food, clothing, ventilation, and sanitation.

Ten experiments taken from Brinkley's Physiology for High Schools, Overton's Advanced Physiology for High Schools, or some other text-book offering experiments in physiology are required.

REFERENCES.

1. Lloyd & Bigelow's Teaching of Biology.
   Longmans, Green & Co., New York, N. Y.
2. Brinkley's Physiology for High Schools.
   Ainsworth & Co., Chicago, Ill.
3. Herrick's Laboratory Manual in Zoology.
   American Book Co. Cincinnati, Ohio.
4. Overton's Advanced Physiology for High Schools.
   American Book Co. Cincinnati, Ohio.

MICROSCOPE.

The microscope may be used in the study of root-hair, starch, stomata, and the structure of various minute parts of the plant, as well as in the examination of plant cells, algae, etc.

SUGGESTIVE EXERCISES IN ZOOLOGY.

1. The compound microscope. 2. One-celled animals. 3. Functions of Organs. 4. Adaptation of organs. 5. How fish breathe. 6. A hen's egg. 7. Metamorphosis of mosquito, frog, butterfly. 8. Struggle for existence. 9. Comparison of specimens. 10. Circulation in frog's foot.

SPECIMENS FOR EXAMINATION.

Amoeba.
Paramecium
Sponge
Campanularian hydroid
Sea anemone
Jelly fish
Tapeworm
Earthworm
Starfish
River mussel
Clam
Oyster
Snail
Squid
Slug
Crayfish
Shrimp
Crab
Scorpion
Cattle tick
Spider
Tarantula
Centipede
Milliped
Grasshopper
Cabbage butterfly.
Cricket
Cockroach
Dragon fly
Squash bug
Moth
Housefly
Mosquito
Beetle
Boll Weevil
Bee
Ant
Wasp
Corn weevil
Cane borer
Perch
Catfish
Frog
Toad
Salamander
Lizard
Garter snake
Turtle
English Sparrow
Quail
Pigeon
Rabbit
Rat
Bat
Squirrel

SUGGESTIVE EXERCISES IN PHYSIOLOGY.

BONES.

1. Materials in bones. 2. Structure of bones. 3. Shape and function of bones. 4. Arches of foot and spine. 5. The skeleton. 6. Articulation of bones.

MUSCLES.

1. Muscular tissue. 2. Tendons and ligaments. 3. Use and attachment of muscles in a bird's leg. 4. Levers in the body.

FOOD.

1. Oxidation and energy (Appendix). 2. Comparison nutritive value foods (Appendix). 3. Effect of bacteria on foods.

DIGESTION.

1. Why food must be digested. 2. Artificial digestion. 3. Study of allimentary canal of an animal. 4. An emulsion. 5. Diffusion. 6. Action of the saliva and teeth. 7. Effect of alcohol.

CIRCULATORY SYSTEM.

1. Study of beef heart. 2. Microscopic examination of blood. 3. Circulation in frog's foot. 4. Flow of blood in blood vessels (p. 159). 5. Coagulation. 6. Diagram to show circulation.

RESPIRATORY SYSTEM.

1. Structure of lungs (beef). 2. Capacity of lungs (chest expansion). 3. Chemical changes in respiration (test). 4. Principles of ventilation. 5. Air capacity schoolroom.

THE KIDNEYS, SKIN, AND BODY HEAT.

1. The kidneys (animal). 2. The structure of the skin to perform its functions. 3. Body heat—clothing, exercise, perspiration.

NERVOUS SYSTEM.

1. Study of brain (beef). 2. Spinal cord and nerve fibre. 3. Reflex action.

SPECIAL SENSES.

1.—Structure of the eye. 2. Structure of the ears. 3. Taste on different parts of tongue. 4. Testing the senses for keenness and accuracy.

ACCIDENTS AND DISEASES.

1. Study of the pulse. 2. To revive a person apparently drowned. 3. Prevention of spread of disease germs. 4. Test purity of water. 5. The hookworm. 6. Tuberculosis.

PHYSICS.

Adopted Text-Book: Gorton's Physics.

The course in physics extends through the third or fourth year of the high school, five periods a week. At least *two* of

these periods should be double periods to be used for individual experiments. Two periods may profitaby be devoted to regular class-room recitation on assigned lessons and on results in laboratory experiments. The equivalent of one period a week should be given to experimental demonstrations by the instructor. Lantern slides may be used to good advantage in many of such demonstrations.

SUGGESTIONS.

ORIGINAL OBSERVATIONS.

1. Each pupil should be required to keep a blank note-book in which to record all original observations *at the time when they are taken.* This book should be used for no other purpose whatsoever.

2. The pupil should be required to record all original observations neatly, accurately and completely. A strict observance of this rule will save the pupil much time, trouble and annoyance in preparation of the written report.

THE WRITTEN REPORT.

The written report is, of course, based upon the record of the original observations. It should be written in ink and incorporated in a *plain,* loose-leafed note-book. Care should be taken tc have the pupil write it in clear, correct, and concise English. Drawings and diagrams should be neatly and carefully made. All observations and derived results should be tabulated when possible.

The report should contain the following:

1. The name of the school in the upper left-hand corner of the page, the name of the pupil and the date of the experiment in the upper right-hand corner of the page and the heading and number of the experiment at the middle near the top of the page.

The experiment should be carefully headed by one of the five general heads of experiments—heat, light, sound, mechanics, electricity—and numbered under each head in the order the experiments are to occur in the note-book. Thirty-five standard experiments selected from the five general heads are required.

2. A clear and concise statement of the object of the experiment.

3. Method of performing the experiment, including description of apparatus used, and an explanation of drawing showing connections and arrangement of apparatus.

4. Observations, computations, and results.

5. Conclusions.

The heading, object of the experiment, and method should be written on the left-hand page of the report. Observations, computations, results, and conclusions should be written out in full on the right-hand page.

SUGGESTIVE FORM OF EXPERIMENT.

High School — Garland Latta
Physics Laboratory. — April 26, 1913.

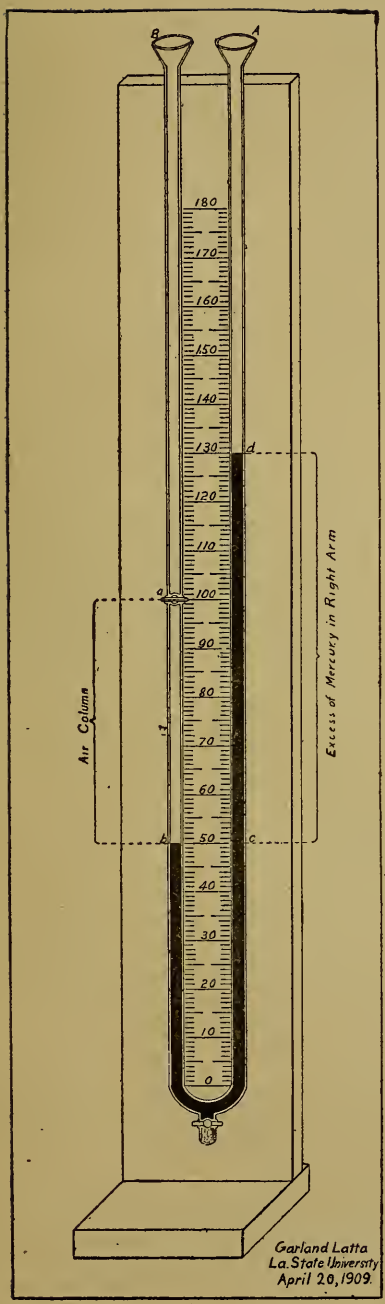
MECHANICS AND HYDROSTATICS.

Experiment 1.

Object: The object of this experiment is to determine the relation between the pressure and volume of a given mass of air at constant temperature.

Method: The apparatus used is shown in the accompanying drawing. It is a glass tube of uniform bore, bent in the form of the letter "U." It is provided with funnels at *A* and *B*. There is a stop-cock at *a* and one at the bottom of the U-tube. Mounted on the same board with the U-tube is a scale between the arms *A* and *B*. This scale reads to millimeters. A full description of this piece of apparatus may be found by referring to pages 149 and 150 of Gorton's A High School Course in Physics.

Leaving stop-cock "a" open, mercury was poured until some convenient length of air column was obtained. The stop-cock was then closed, more mercury was added and the reading on both *A* and *B* were taken. Continuing this process of adding mercury and taking readings, a suitable number of readings were



Boyle's Law Apparatus

recorded. These are shown in the table of original observations. The barometer reading was carefully taken and recorded, also the reading of stop-cock "a." The temperature of the room was observed to remain constant during the performance of the experiment. The lengths of the air column were obtained in each case by subtracting the corresponding reading of the mercury levels in arm "B" from the readings of the stop-cock "a." The bore of the tube being of uniform cross-section, the volume of air is equal to the length of the air column times the area of cross-section of the bore, *a*.

The total pressure, expressed in cm. of mercury, for any observation is equal to the barometer reading plus the difference of mercury levels for that observation. The actual unit pressure is equal to the total pressure expressed in cm. of mercury, times the density of mercury, *d*.

The difference of mercury levels is obtained by subtracting the reading of arm "B" from the reading of arm "A."

The (PxV) column is gotten by multiplying the actual total pressure by the volume of air.

Result:

ORIGINAL OBSERVATIONS.

Obs. No.	Mercury Level in A Cms.	Mercury Level in B Cms.	Obs. No.	Mercury Level in A Cms.	Mercury Level in B Cms.
1	92.85	88.58	7	127.85	91.78
2	97.85	89.17	8	132.85	92.12
3	102.85	89.71	9	139.85	92.55
4	108.85	90.27	10	146.85	92.90
5	115.95	90.88	11	154.85	93.30
6	120.85	91.31			

Barometer Reading=76.13. cms. Reading of stop-cock=100 cms.

COMPUTATIONS AND RESULTS.

Obs. No.	Length of Air Column.	Volume of Air Column.	Difference in Mercury Levels.	Total Pressure in Cms. of Mercury.	Actual Total Unit Pressure.	P x V
1	11.42	11.42a	4.27	80.40	80.40d	918.1680ad
2	10.83	10.83a	8.68	84.81	84.81d	918.4923ad
3	10.29	10.29a	13.14	89.27	89.27d	918.5883ad
4	9.73	9.73a	18.58	94.71	94.71d	921.5283ad
5	9.12	9.12a	25.07	101.20	101.20d	922.9440ad
6	8.69	8.69a	29.54	105.67	105.67d	918.2723ad
7	8.22	8.22a	36.07	112.20	112.20d	922.2840ad
8	7.88	7.88a	40.73	116.86	116.86d	920.7780ad
9	7.45	7.45a	47.30	123.43	123.43d	919.5535ad
10	7.10	7.10a	53.95	130.08	130.08d	923.5680ad
11	6.70	6.70a	61.55	137.68	137.68d	922.4560ad

Let a = area of cross-section of bore of U-tube, d = density of mercury.

Conclusion: From the column marked (PxV) under the head "Computation and Results," it will be observed that, while the pressures times their corresponding volumes are not exactly constant, they differ very little. The differences are no doubt due to errors of observation. They seem to justify the conclusion that the volume of a given mass of air at constant temperature varies inversely as its pressure. Expressed mathematically,

$$V : V' :: P' : P, \text{ or } PV, \text{ equals Const.}$$

This is known as Boyle's Law.

Curve Plotted: Each point of the curve is gotten in the following manner:

Go out along the horizontal axis until the reading of a certain pressure is obtained; from this point go up vertically until the point corresponding to the volume reading for this particular observation is reached. Make a fine dot at this point and

draw a small circle around it. After all the points are obtained, draw a smooth curve passing as nearly as possible through each point.

The curve furnishes a complete history of the relation between pressure and volume at any point within the limits of the experiment. That is, should it be desired to know the volume when the pressure is 1,000 mm., one has only to refer to the curve at the point where "P" is 1,000 and read the corresponding volume, which is in this case approximately 92.18 mm.

Sixty experiments, selected from the five parts, heat, light, sound, electricity, and mechanics, are offered as suggestive. The thirty-five experiments required may be selected from this group, from another group equally comprehensive, or from the list suggested by the College Entrance Examination Board, Post Office sub-station No. 84, New York, N. Y.

Note-books in any of the inductive sciences are not to be submitted to the State Department of Education for approval unless called for.

LIST OF EXPERIMENTS IN PHYSICS.

1. Experimental determination of $\overline{\text{II}}$,
2. Determination of the volume of a cylinder.
3. Determination of the density of steel spheres.
4. Density of air.
5. Compressibility of air; Boyle's law.
6. Lifting effect of water upon a body entirely immersed in it.
7. Specific gravity of a solid body that will sink in water.
8. Specific gravity of a block of wood by the use of a sinker.
9. Weight of water displaced by a floating body.
10. Specific gravity by flotation method.
11. Specific gravity of a liquid; two methods.
12. Use of manometers.
13. Linear expansion of a solid.
14. Testing of a mercury thermometer.
15. Increase of pressure of a gas heated at constant volume.
16. Determination of the dew point.
17. Increase of volume of gas heated at constant pressure.
18. Specific heat of metals.
19. Latent heat of melting.

20. Latent heat of vaporization.
21. Velocity of sound in air.
22. Number of vibrations of a tuning fork.
23. Wave length of sound in air.
24. Laws of reflection from plane mirrors.
25. Index of refraction of glass.
26. Index of refraction of water.
27. Path of a beam of light through a prism.
28. Dispersion.
29. Focal length of a converging lens.
30. Image in a plane mirror.
31. Conjugate a foci of a lens.
32. Shape and size of a real image formed in a lens.
33. Virtual image formed by a lens.
34. Magnifying power of a simple lens.
35. Use of a photometer.
36. Lines of force near a bar magnet.
37. Lines of force near a certain combination of horse-shoe magnets.
38. Molecular nature of magnetism.
39. Study of a single-fluid cell.
40. Study of a two-fluid cell.
41. Lines of force about a galvanoscope.
42. Magnetic effect of a current.
43. Magnetic effect of a coil carrying a current.
44. Electromotive force.
45. Ohm's Law.
46. Resistance of wires by substitution.
47. Resistance by Wheatstone bridge.
48. Battery resistance.
49. Induced currents.
50. Electrolysis and electroplating.
51. Putting together the parts of a telegraph key and sounder.
52. Putting together the parts of a small motor.
53. Putting together the parts of a small generator.
54. Elasticity; stretching.
55. Elasticity; bending; effect of varying loads.
56. Elasticity; bending; effect of varying dimensions.
57. Resultant of two or more forces.

58. The principles of moments.
59. The principles of work.
60. The laws of the pendulum.
61. Comparison of masses by acceleration.

REFERENCES.

1. Smith & Hall's Teaching of Chemistry and Physics.
Longmans, Green & Co., New York, N. Y.
2. Millikan and Gale's Laboratory Manual in Physics.
Ginn & Co., Atlanta.
3. Hoadley's Brief Course in Physics.
American Book Co., Cincinnati, O.
4. Carhart & Chute's High School Physics.
Allyn & Bacon, Chicago, Ill.
5. Hoadley's Laboratory Handbook.
American Book Co., Cincinnati, O.
6. Cheston-Dean-Timmerman Laboratory Manual of Physics.
American Book Co., Cincinnati, O.

CHEMISTRY.

Text: Hessler & Smith's Essentials of Chemistry.

The course in chemistry provides for one year of work in the subject, the third or fourth year in the high school. Five regular periods are to be given to chemistry every week and two of these are to be double periods for individual laboratory work.

The three periods not devoted to individual laboratory work are intended for recitations based on laboratory work, on related portions of adopted text, and on demonstrations of experiments performed by instructor. The equivalent of at least one period a week should be given to experiments performed by instructor. Teachers of chemistry will find the handbook prepared by the authors of the adopted text very helpful in selecting appropriate experiments for class demonstrations. (See pages vi and vii of preface in adopted text.) Valuable suggestions in laboratory and class room instruction may be found in chapters iv and v of Smith & Hall's Teaching of Chemistry and Physics.

The general form for writing out experiments in physics is suggested for guidance in the writing up of experiments in chemistry.

At least forty experiments selected from the laboratory exercises comprising the latter portion of the adopted text are required. The choice and order of these experiments will be determined by the teacher.

Most attention should be given to chemical elements which are commonest and of most industrial significance. (See syllabus on agricultural chemistry.)

List of experiments based on report of the Committee on Chemistry of the Science Department of the National Educational Association:

General—

1. Composition of the atmosphere.
2. Disassociation of mercuric oxide, and study of resulting products.
3. Burning of magnesium, sodium, and potassium in air, and of iron in oxygen, with study of resulting products.
4. Combination of substances produced in 3 with water, and study of results.
5. Burning of sulphur and phosphorus in air; study of products.
6. Combination of substances produced in 5 with water; study of products.
7. Treatment of substances resulting from 3 and 4 with hydrochloric acid, and examination of final products.

Laws of Gas Volume and Vapor Tension—

8. Boyle's Law.
9. Charle's Law.
10. Vapor tension as related to temperature.

Common Elements and Compounds—

11. Preparation and study of oxygen.
12. Weight of a litre of oxygen under standard conditions.
13. Preparation of hydrogen by action of sodium on water. Careful study of by-product.
14. Preparation of hydrogen by zinc and acid. More thorough study of hydrogen in larger quantities. Study of by-product.
15. Weight of a litre of hydrogen under standard conditions. (Optional for best students.)

16. Proportion by weight in which hydrogen and oxygen unite. (Lecture demonstrations with eudiometer.)
17. Proportion by weight in which hydrogen and oxygen combine.
18. Study of boiling point, freezing point, action of litmus, and taste of substance, produced by combining oxygen and hydrogen.
19. Electrolysis of water, resulting gases being accurately measured and tested.
20. Vapor density of water, conclusion as to formula for water. (Optional for best students.)
21. Study of sodium, potassium, lithium, strontium, calcium, and barium compounds.
22. Study of salts of cobalt, copper, nickel, manganese, chromium, iron.
23. Study of compounds of aluminium, magnesium, and zinc.
24. Tests for silver, lead, and bismuth in unknown mixtures of 21, 22, and 23.
25. Tests for mercury and arsenic in unknown mixtures of 21, 22, 23, and 24.
26. Preparation and study of chlorine gas.
27. Weight of a litre of chlorine.
28. Combustion of chlorine in hydrogen.
29. Preparation of hydrochloric acid and study of products.
30. Decomposition of hydrochloric acid gas by sodium amalgam, and conclusions as to percentage composition. Avogadro's Law.
31. Preparation and study of at least three chlorides.
32. Preparation and study of bromine.
33. Preparation of at least three bromides.
34. Preparation and study of iodine.
35. Preparation of at least three iodides.
36. Comparative study of the chemism of chlorine, bromine, and iodine by mutual displacement.
37. Study of hydrofluoric acid and fluorides.
38. Determination of the combining proportion of chlorine and zinc, and the atomic weight of zinc.
39. Atomic weight of zinc from specific heat. Law of Dulong and Petit.

40. Atomic weight of silver by displacement of zinc.
41. Study of forms of sulphur.
42. Direct formation of sulphides.
43. Study of sulphurous oxide.
44. Preparation of sulphurous and sulphuric acids.
45. Preparation of at least two sulphites and two corresponding sulphates. Comparative study of these.
46. Decomposition of ammonium nitrate and study of nitrous oxide.
47. To determine the composition of nitrous oxide. Gay-Lussac's Law.
48. Preparation and study of nitric acid.
49. Preparation of three nitrates in three different ways.
50. Composition of gas formed by action of cold dilute nitric acid on copper.
51. Composition of gas formed by union of nitric oxide and oxygen.
52. Preparation of chromic anhydride, chromic acid, and potassium chromate.
53. Changing potassium chromate to potassium bichromate and back again. Oxidation and reduction in solutions.
54. Chromium as an acid-forming and as a base-forming element. Preparation of chromium sulphate.
55. Preparation of ferrous and ferric salts.

Carbon and Some Carbon Compounds.

56. Product of burning charcoal. Tests.
57. Test for presence of carbon in wood, paper, kerosene, coal gas, alcohol.
58. Preparation of three carbonates.
59. Solubility of carbonates in the presence of carbon dioxide.
60. Effect of heat on suspension of carbonates in solution.
61. Carbon dioxide from fermentation.
62. Alcohol from fermentation.
63. Preparation of ether by alcohol and sulphuric acid.
64. Preparation of alkaline salts by fatty acids, or soap-making.

REFERENCE BOOKS.

1. Dobbin & Walker. Chemical Theory for Beginners. Macmillan Co., Atlanta, Ga.

2. Lassar-Cohn. Chemistry of Daily Life.
   Lippincott Co., Philadelphia, Pa.
3. McPherson & Henderson. Exercises in Chemistry.
   Ginn & Co., Atlanta, Ga.
4. Smith & Hall. Teaching of Chemistry and Physics.
   Longmans, Green & Co., New York, N. Y.
5. Van't Hoff. Physical Chemistry in the Service of the Sciences.
   University of Chicago Press, Chicago.

GEOGRAPHY.

FIRST HALF—FIRST YEAR.

Review Frye's Higher Geography.

HISTORY.

It is recognized that the study of history has not only a disciplinary, but also a practical value, that it not only furnishes the student with facts which he will find useful, but it gives him a storehouse of ideas and broadens his range of experience. It also helps to the understanding of present-day civilization and its problems by showing that they have developed out of the past and it applies to them the experience of the past. The study of the history of one's people, country and institutions not only assists to a solution of present problems, but it tends to inculcate principles of enlightened patriotism, to prepare the student to comprehend public questions and fit him for the duties and responsibilities of citizenship. A close study of history in school and college will give to the student an acquaintance with practical problems that can otherwise be gained only by long experience in public affairs. It also furnishes material for other higher mental activity, and a basis for other studies, such as economics, political science, literature, etc.

In the elementary school the pupil has made an acquaintance with some of the great characters and great events of history. In the high school the object of the history work is to give systematic instruction over the general field of history, to show the relation between cause and effect in human affairs, to get from past experience lessons for the present.

For best results the study of history in the high school should follow the chronological order. Consequently the course has been fixed as follows: 1. Ancient History. 2. Mediæval and Modern History. 3. United States History. Ancient History deals with human society in its simplest forms; so also to a certain extent with Mediæval History. In these fields the student may acquire the historical attitude of mind, the philosophical point of view before coming to the study of more recent and more controversial periods. With the training in historical habits of thinking acquired from the study of the past the pupil is better prepared to deal in a broad and tolerant spirit with those more complex questions of modern history about which there may be still more or less honest difference of opinion.

In every course the text-book should be used as the basis of the work in order that the pupil may get a connected account. But the old way of "hearing" a lesson repeated by heart from the text should be avoided. At every lesson there should be a short rapid quiz on the work assigned for the day or on the work already done. The text also furnishes material for class discussion; a topic such as "Greek Religion" may be assigned to the class to be traced through the text by the aid of the index; frequent written recitations based upon the text may be required, and the pupils should be carefully trained in the making of topical outlines or analyses based upon the text.

In addition to the work with the text, attention should also be given to historical geography and map work, collateral reading, examination of historical pictures, etc.

In the map work the pupil should be required to locate upon the map in the text all the places mentioned in each day's lesson. Wall maps suited to the period are of value, and at least one historical atlas should be available. Historical charts are of more value than wall maps. From the outline maps, furnished in quantities by several publishers, the pupil may make completed maps in colors. The physical basis of history is well illustrated by relief maps. The following are good small atlases for school use: Dow, Atlas of European History (Holt, $1.50); Gardiner, Atlas of English History (Longmans, $1.50); Hart, Epoch Maps of the United States (Longmans, $0.25); Foster, Forty Maps of the United States (Historical Pub. Co., Topeka,

Kans., $1.00). Good charts are published by Silver, Burdett & Co., Boston; Historical Publishing Company, Topeka, Kans., and Atkinson, Mentzer & Grover, Chicago ($10.00 to $20.00 each). Relief maps can be purchased from W. B. Harison, 59 Broadway, New York (5 to 10c each), and Atkinson, Mentzer & Grover, and Atlas School Supply Company, Chicago ($15.00 each for large indestructible maps). Outline maps are sold by the McKinley Publishing Company, Philadelphia; W. B. Harison, New York; Atkinson, Mentzer & Grover, Chicago, etc., price ¼c to 15c each. The Census Bureau, Washington, D. C. publishes (free as long as the supply lasts) a Statistical Atlas of the United States which is worth much to classes in industrial history.

Historical pictures can be used to illustrate the text work and make it more interesting. Pictures appeal to the mind through the eye; they stimulate the imagination—something necessary to historical studies; they furnish concrete illustrations, make more definite a period, event or character. They create an historical "atmosphere," and in many ways serve as an index to the civilization of the past. Good pictures can be had at all prices from one-fourth of a cent to several dollars each. All good texts have them. Loose prints can be used in class and later pasted in note-books or scrap-books or classified in envelopes. The best cheap prints can be had from the following firms: G. P. Brown, Beverly, Mass.; Perry Pictures Company, Malden, Mass.; Cosmos Pictures Company, 296 Broadway, New York; Bureau of University Travel (which has the best classification for history purposes) Boston; W. B. Harison, 59 Broadway, New York (has the best reproductions of ancient art). Wall pictures can be obtained from all of the above and from the Chicago Art Education Company; Soule Art Company, Boston (Bible pictures); American Tissot Company, New York (Tissot Bible pictures); Berlin Photographic Company, New York; A. W. Elson Company, Boston. Lantern slides can be secured from Underwood & Underwood, New York, and from many other companies.

For giving life to historical studies extracts from "sources" are often useful. The teacher should possess a source book on each field of history, whether the class uses source books or not.

The best ones are: Fling's Source Book of Greek History (Heath); Botsford's Story of Rome (Macmillan); Ogg's Source Book of Mediæval History (American Book Company); Robinson's Readings in European History (Ginn); Kendall's Source Book of English History (Macmillan Company); Hart's Source Book of American History, and American History Told by Contemporaries (Macmillan Company). In addition to these much other "source" material is available. In the text-books a note on the end of each chapter refers to the "sources" for that chapter.

In the study of history much written work should be insisted upon. To preserve this work use loose-leaf note-books. In the note-book may be gathered the topical outlines, analyses, summaries, extracts, quotations, lists of names and dates, etc., from the text and from library readings. Frequently "historical problems" should be propounded—questions based upon the text but which cannot be answered in the language of the text, and debates on historical questions may be written out. Historical subjects should be chosen for English essay work and the papers preserved in the note-book. Loose pictures and maps can be used to illustrate the note-books.

The object of the syllabus is to furnish a selection of the most important topics in each field of history, topics upon which the work of the pupil should be concentrated to the exclusion of minor details. In the time allotted, only the large subjects can be studied; if one is required to know all the names and dates in Egyptian History there will be no time for any acquaintance with the splendid institutions of the later Roman Empire. With the syllabus as a guide, the text can be used as a mine from which information is to be obtained. The teacher should insist on constant comparisons of one period, character or interest with another, of the present with the past. In no other way can the full value of historical studies be secured. In order that the text work and reading may be properly digested and assimilated, the syllabus provides suggestions for map, picture and note-book work, as well as frequent reviews and "study problems."

Books on Methods:

1. Bourne, E. G., The Teaching of History and Civics. (Longmans, Green & Co., New York City.)

2. A History Syllabus for Secondary Schools. (D. C. Heath & Co., Boston.)

3. Report of the Committee of Seven on History in Schools. (Macmillan Co., Atlanta, Ga.)

4. Historical Sources in Schools. (Macmillan.)

5. Johnson, H., History in the Elementary Schools. (Columbia University Press, New York City.)

SYLLABUS OF ANCIENT HISTORY.

Text: Botsford's Ancient History. Five times a week. Second Year.

The study of ancient history will give to the pupil a knowledge of the continuity of historical development, a foundation for later studies, and a consciousness of our heritage from the past. In this period where controversies do not rage, the historical habits of thinking are best formed. Too much should not be demanded of the pupil: an acquaintance with the great characters of antiquity, a knowledge of the few great principles evolved from the comparatively simple experiences of the dead nations, an understanding of the slow growth of civilization, of the relation of cause and effect in human affairs—if this is fairly accomplished, the work is successful.

Pictures:

Pictures of the following subjects can be obtained from the publishers named above: Temple of Abydos, Philae, Edfu, Esne, Kom Ombo, Karnak; the pyramids and the sphinx; mummies and coffins; ancient writings and inscriptions; Chaldean and Assyrian temples; Bible pictures; Apollo, Nike, Athene, Hermes, Psyche, Paris, Ænea, Sapho, Alexander, Venus, Victory of Samothrace, Faun of Praxiteles, Sophocles, Demosthenes, the Discobolus, Laocoon, Penelope; Temples of Minerva, Jupiter, Theseus, Poseidon, etc.; Greek vase; Homer, Aphrodite, the Acropolis, theatres, Parthenon, Agora at Athens, tomb of Atreus; Areopagus, Solon; Athenian men, women and children; sports and amusements in Greece, etc.; Temples of Ceres, Venus, Diana, Neptune, etc., in Italy; Roman ruins in Europe, Asia

and Africa; chariot, baths of Caracalla, Forum, Coliseum, Palaces of Caligula, the Cæsars, etc.; Pantheon, Tarpeian rock, arches of Titus, Constantine, etc.; aqueducts of Claudius, Appian way, catacombs, Cæsar, Cicero, Marcus Aurelius, Nero, Seneca, etc.; dying gladiator, doves of Pliny; Juno, Mars, Cupid, Minerva, Pomona, Roman matron, Mercury, Pompeii, Roman social and military life; Roman domestic and public architecture; Roman inscriptions, coins, writings, etc.; tombs, coffins, and cinerary urns; theatres, basilicas, etc.

Map Work:

The following subjects are suggested for map work in addition to those mentioned in the syllabus. They may be substituted for those or worked on in atlas form: (1) The Orient; (2) physical Greece; (3) earliest settlements in Greece; (4) Greek colonies, 750-500 B. C.; (5) Persian invasions; (6) Athens under Pericles; (7) Athenian Empire; (8) the Peloponnesian war; allies of Athens and Sparta; (9) campaigns and empire of Alexander; (10) geographical extent of Greek influence; (11) physical Italy, with location of tribes; (12) Early Rome; (13) enemies of Rome in Italy; (14) expansion of Rome to 133 B. C.; (15) possessions of Rome and Carthage in 264 B. C.; (16) Hannibal's route from Spain to Italy; (17) expansion of Rome 135 B. C. to 14 A. D.; (18) City of Rome under the Emperors; (19) a Roman military camp—see West, Ancient History; (20) Roman Empire at its greatest extent; (21) Roman Empire under Diocletian—prefectures and dioceses; (22) the dangerous frontiers; (23) routes of German invaders in the Roman Empire; (24) German States on Roman soil, 525 A. D.; (25) expansion of the Frankish Empire to 814 A. D.

Reference Books:

The following list contains inexpensive books useful for library reading in connection with the text: 1. Dow's Atlas of European History (Heath). 2. Bury's History of Greece (Macmillan). 3. Oman's History of Greece (Longmans). 4. Guerber's Myths of Greece and Rome (American Book Co.). 5. Plutarch's Lives. 6. Tarbell's History of Greek Art (Macmillan). 7. Gulick's Life of the Ancient Greeks (Appleton). 8. Jebb's

Greek Literature (American Book Co.). 9. Mahaffey's Survey of Greek Civilization (Macmillan). 10. Dickinson's Greek View of Life (McClure). 11. Mahaffey's Old Greek Life (American Book Co.). 12. How and Leigh's History of Rome (Longmans). 13. Preston and Dodge's Private Life of the Romans (Sanborn). 14. Thomas' Roman Life Under the Cæsars (Putnam). 15. Wilkins' Roman Antiquities (American Book Co.). 16. Tighe's Development of the Roman Constitution (American Book Co.). 17. Fairbanks' Mythology of Greece and Rome (Appleton).

ORIENTAL HISTORY.

I. Egypt.

1. The land, the Nile, the climate.
2. Summary of the political history.
3. The people: race, classes, occupations.
4. Civilization: writing, literature, architecture, sciences, industries, religion.
5. Important individuals: Khufu, Seti I, Rameses II.
   (a) Locate on the text map the places mentioned in the lesson.
   (b) Pictures: pyramids, temples, inscriptions, Sphinx, Karnak; coffin and mummy; see text pictures, and the Perry, Brown, and Cosmos prints.
   (c) Reading: see text, p. 14. The time for reading will be limited. Follow the readings suggested in the text.

II. Empires of the Tigris and Euphrates Valleys.

1. The land, the two rivers, the climate.
2. The people: mixed races, character, occupations.
3. Political history of Chaldea-Assyria.
4. Civilization: government, literature, religion, architecture, science.

THE SYRIANS

5. The Phœnicians: their commerce; the alphabet; spread of civilization.
6. The Hebrews: origin, political history; religion and literature.

(a) Map work: Locate the places mentioned in the text. Note on the map (p. 2) the location of Syria on the road between the great empires; and the good location of Tyre and Sidon for commercial purposes.

(b) Pictures: See the text pictures; Brown and Perry pictures of Palestine; Wilde's Bible Pictures; Tissot's Bible pictures.

III. The Medes and the Persians.

1. The Great Kings: Cyrus, Cambyses, Darius, Xerxes.
2. The political organization of Persia.
3. Civilization: Architecture, religion, morals.

THE FAR EAST.

5. India: people, caste system, religion.
6. China: people, literature, religion, philosophy.

(a) Map work: Make a map (by tracing or by filling in an outline map), showing the countries studied. Attach it to the note-book.

(b) Pictures: See the text pictures. Explain each.

IV. Review. Study Problems.

1. What is civilization? 2. Make a list of Oriental contributions to later civilization. 3. Why do we not study the history of uncivilized peoples? 4. How are the Persians related to the French? to the English? 5. What have the metals to do with civilization? 6. Name the several geographic conditions that influence Oriental history.

Map work: Make a map (by tracing, or by filling out an outline map) on which is shown the countries studied above.

(a) Write out the answers to the above exercises in the note-book.

(b) Write in the note-book a topical outline of "The Oriental Civilization."

(c) The note-book may be illustrated by pasting in tracing maps or completed outline maps made during the preceding lessons.

HISTORY OF GREECE.

V. The Geography of Greece.

1. The position of Greece with respect to the Orient.
2. The Mediterranean and the Ægean.
3. The location of the best harbors.
4. The three divisions and the kind of people in each.
5. Mountains, climate, products.
6. Asiatic Greece: the islands.

Map work: Study text maps (opposite p. 40 and p. 47) and other physical maps in connection with this chapter. The text pictures also illustrate the geography of the country. Stereographs are good.

VI. Prehistoric Greece.

1. Gradual development of the Greek religion.
2. The gods and the heroes; other myths. Value of the myths.
3. The people: races, location, myths of migration.
4. Homer and the Trojan War. Value of the Homeric writings.
5. Prehistoric civilization: social life, industry, government.

Map work: Find the places mentioned in the text, pages 40, 47.

Pictures: Pages 46, 48, 49; those in Ch. II, and the Brown, Perry, and Cosmos prints. The Bureau of University Travel prints are best for this period—pictures of Phaistas and Cnossas, the Lion Gate at Mycenæ, gold ornaments.

VII. Expansion of Hellas.

1. Colonization: causes, organization of a colony; relation to the mother state.
2. Location of colonies: North, West, South.
3. Results of colonization:
   (a) Map work: Make a map (based on the text and the maps on pp. 66 and 72), showing Ionian colonies in red, Dorian in blue, others in yellow.
   (b) Pictures: Text pictures; prints—Perry, Brown, Cosmos; classified prints in part 2 of Bureau of University Travel catalogue.

(c) Note-book: Outline this subject: "Greek Colonization, its Causes, Extent, General Character, and Results."

VIII. Early Greek Institutions.

1. The city state. Compare it with the Persian Empire.
2. The Amphictyones and the political leagues.
3. The Oracles.
   (a) Map work: 1. Delian League and Delphic Amphictyony. 2. On an outline map mark each place mentioned in lesson.
   (b) Note-book work: 1. Outline chapter IV. 2. Paste maps and prints in note-book in proper place.

IX. Review. Study Problems.

1. Compare the surface features of Greece with those of the Orient. 2. Make a list of the ways in which geography influenced the Greeks. 3. Suppose the good harbors had been on the western coast, would the history of Greece have been different? 4. Compare the life of the early Greeks (1) with the life of the English colonists in Virginia; (2) with the life of the North American Indians. 5. Was there more good than evil in the early Greek religion? 6. Differences between a Greek state and a modern state? 7. Describe "Life in the Homeric Age." 8. What Oriental influences do you find in early Greek history? 9. Why did the first colonists go to the East? Why did Greeks want to settle in Italy, Sicily? 10. Did the colonies or the mother country advance more rapidly in civilization? 11. How did the colonies benefit the mother country? 12. What was the relation of a colony to the mother state? 13. Show how the religious leagues, the games, festivals, etc., helped to unite the Greeks politically?

X. Athens from Kingship to Democracy.

1. Transition from kingship to aristocracy.
2. The lawgivers: Draco, Solon.
3. The Constitution of Solon.
4. The tyrants: causes of tyranny; good results.
5. The Constitution of Cleisthenes; democracy.

(a) Pictures: Text pictures; prints from Bureau of University Travel.

(b) Note-book: Biographical sketch of Draco, Solon, Pisistratus, or Cleisthenes.

XI. Sparta and the Peloponnesian League.

1. Classes of the people: Spartans; perioici; helots.
2. The Spartan system of education (write in note-book).
3. The government and the army.
4. The Peloponnesian League.

INTELLECTUAL PROGRESS.

5. Poetry, philosophy, art.
   (a) Pictures: Text, and prints of architectural subjects.
   (b) Map work: Compare the physical geography of Sparta with that of Athens; locate all the places mentioned on map, p. 103.

XII. Conquest of Asiatic Greece.

1. The Ionian Greeks (for note-books).
2. Crœsus and Cyrus; Cambyses and Darius (one of these for the note-book).
3. The Ionian revolt.
4. Persian plan to conquer European Greece.
   (a) Map work: Color an outline map (see pp. 116, 125) to show (1) the Persian Empire; (2) the Greek colonies in Asia Minor; (3) extent of the Ionic revolt.
   (b) Pictures: Persians (p. 132). Note the trousers. Why were the Greeks afraid of "trousered" people?

XIII. War with Persia and Carthage.

1. The invasion of 490 B. C. and the battle of Marathon.
2. Leaders: Miltiades, Aristides, Themistocles.
3. Invasion of Xerxes: Thermopylæ; Arthemisium; Athens; Salamis; Platæa; Mycale.
4. Carthagenian invasion of Sicily.
5. Results of these foreign wars.
   (a) Map work: Locate lines of march, battles, etc., on an outline map; study the small maps.
   (b) Pictures: Themistocles, Miltiades, Marathon.

XIV. Review. Study Problems.

1. What was the difference between a king and a tyrant? 2. Which did the common people prefer, a tyranny or an oligarchy (aristocracy)? 3. Causes of strife about 628 B. C.? 4. What changes in the Athenian government took place between Solon and Cleisthenes? 5. Compare Solon with Draco; with Cylon; with Pisistratus; with Cleisthenes. 6. Compare the heliots with the hectemoroi. 7. Compare Sparta with Athens. 8. Compare the training of Spartan youth with the training of modern youth. What was the object of the Spartan system? Of the modern educational system? 9. Differences in government between the Peloponnesian League and the United States? 10. Was Sparta a democracy or an oligarchy? Athens? 11. Would you rather read Homer or Hesiod? Why? 12. Name and give examples of the early forms of poetry. 13. Select pictures to illustrate the three orders of architecture? 14. Was ostracism a good or bad thing for Athens? 15. How have they improved from the Homeric age to about 500 B. C. in religion, government, art, etc.? 16. Criticise the Ionians. 17. Why did the Asiatic Greeks consider the Persian rule more oppressive than the Lydian rule had been? 18. Were the Persian heralds justly treated? 19. What city deserved most credit for the Greek victory over Persia? 20. Make a list of the results of the Persian wars.

XV. Leadership of Athens Under Cimon (479-467).

1. Fortification of Athens.
2. The Confederacy of Delos develops into the Athenian Empire.
3. Revolts of allies; causes and results.
4. Relations between Sparta and Athens.
5. Political parties in Athens.
6. Paper: Cimon, Themistocles, Aristides.
   (a) Map work: On outline map color (1) Delian League; (2) allies added to make it the Delian Confederacy.
   (b) Pictures: Acropolis; wall of Athens; trireme.

XVI. Athens Under Pericles.

1. The extent of the Athenian Empire.
2. Relations with neighbors and allies.

3. Government by Athenian democracy.

4. The civilization: art; literature; education; social life; politics.

5. Paper: Art in the Age of Pericles.

(a) Map work: (1) Athenian Empire; (2) plan of Athens.

(b) Pictures: Parthenon views: Acropolis; temples on the Acropolis.

XVII-XVIII. The Peloponnesian War.

1. Causes of the war; resources of Athens and Sparta.
2. Character and chief events of the war.
3. The leaders on each side.
4. The Sicilian expedition.
5. Political troubles in Athens.
6. Causes of the downfall of Athens.
7. Results of the war.

THE NEW LEARNING.

8. The sophists.
9. The dramatists.

(a) Map work: (1) Athens and her allies; Sparta and her allies; (2) the Syracusan campaign; (3) locate each place mentioned in Chapters XI and XII.

XIX. Review Study Problems.

1. Read Chapter XVII and study the pictures and the map. This chapter is of slight importance. 2. Is Themistocles to be blamed for the trick played about the walls of Athens? 3. Was Athens justified in holding the Confederacy together by force? 4. What benefits did the allies enjoy? 5. Write a history of the Areopagus. 6. Why could Athens build up a maritime empire more successfully than a land empire? 7. Compare the Athenian democracy with that of an American state. 8. Why was the art, literature, and philosophy of Athens superior to that of other Greek states of this time? 9. Value of the Greek theatre? 10 Make an outline of the causes of the Peloponnesian war. 11. What principles were at issue? 12. Which side stood for the better things? 13. Compare Pericles with Cleon. 14. Your estimate of Alcibiades. 15. An outline of the Peloponnesian war.

XX. Hegemony of Sparta.

1. Imperial policy of Sparta; decarchies, etc.
2. Foreign wars.
3. Persian interference in Greek affairs.
4. Rise of Thebes and defeat of Sparta.
5. Why did Sparta fail?
6. Paper: (1) The Decarchies; (2) the Theban army.
   (a) Map work: On outline map color red the territory controlled by Sparta. Locate all places mentioned in Chapter XIV.

XXI. The Supremacy of Thebes.

1. Policy of Epaminondas.
2. Why Thebes failed.
3. Condition of Greece after the battle of Mantinea.
4. Contrast the Spartan with the Athenian hegemony; with the Theban.
5. Results of the civil wars.
6. Outline: Life of Epaminondas.
   (a) Map work: Study map opposite p. 217 and explain each color.

XXII. Rise of Macedon.

1. The country and the people.
2. Philip: character and training.
3. Conquest of South Greece.
4. Literature and art: Xenophon, Demosthenes, Plato; theatres.
5. Paper: Demosthenes.

   Map work: Color on outline map (1) Macedon, red; (2) states conquered by Philip, blue.

XXIII. Alexander the Great.

1. Character of Alexander.
2. His Asiatic conquests.
3. Results of his work.
4. Attempts at federal union.
5. Spread of Greek civilization: Orient, Egypt.
6. Outline: Career of Alexander.

   Map work: Alexander's empire, showing his line of march, his battles, and cities founded by him.

XXIV. Summary of Greek Civilization.

1. Religion and philosophy. 2. Education and physical training. 3. Position of women. 4. Social life. 5. Great literature. 6. Sculpture and architecture. 7. Government: the city state. 8. Slavery. 9. Spread of Greek civilization: Orient; Egypt; Rome; influence on modern culture.

Dickinson's Greek View of Life is good on the above subjects.

XXV. Review. Study Problems.

1. Why were Sparta and Thebes less successful than Athens in ruling other states? 2. Was the treaty of Antalcidas a disgrace to Greece? Who was responsible for it? 3. Did Greece gain anything from the Spartan or the Theban supremacy? 4. Did the Greek states deserve to be left independent? 5. Why did Athens develop in civilization more rapidly than Macedon? 6. Which was right, Philip or Demosthenes? 7. Should Greece have submitted to Macedon leadership? 8. Services of Alexander to civilization. 9. If Philip and Alexander had never lived, would the Greek civilization have been as widely spread? 10. Write a paper on the "Attempts at Federal Union." 11. Make a list of the contributions of the Greeks to later civilization.

ROMAN HISTORY.

XXVI. Italy: The Country and the People.

1. The migrations into Italy. First settlers. The principal peoples.
2. The Italian city state. Compare with the Greek city state.
3. The schoolmasters of Rome: the Etruscans and the Greeks.
4. Geographic conditions affecting early history.

Map work: (1) Study the physical map of Italy; (2) locate on an outline map the most important tribes of Italy.

Note-book: Outline—"The Greeks in Italy and Sicily." See index under Italy.

XXVII. Prehistoric Rome.

1. The myths and their value.
2. The early Romans; character, occupations, classes, family life.

3. Government: family, curia, tribe, king, senate, assembly.
4. Servian reforms in government.
5. Religion and morals.
6. Why the kings were displaced.

Map work: Map of the City of Rome, showing each hill and the principal buildings.

Note-book: Paper on "The Roman Family."

XXVIII. Rome Supreme in Italy.

1. Foreign wars and conquests.
2. Issues: highland vs. lowland civilization.
3. Reorganization of the Roman army.
4. Organization of new territory; colonies; roads; government.
5. What gave to Rome the victor?

Map: Roman roads and colonies in Italy.

Note-book: (1) Organization of the early republican army; (2) Roman road-making.

XXIX. The Struggle Between the Classes (500-264).

1. The government after the monarchy was destroyed; consuls; senate; two assemblies.
2. Peculiarities of Roman assemblies.
3. Grievances of the plebeians leading to the secession.
4. The struggle for written laws and its results.
5. The struggle for economic rights. What was gained?
6. The struggle for political rights. What was gained?
7. The classes during this period.

Note-books: (1) The Decemvirs and the twelve tables; (2) make a list, with dates, of all that the plebeians gained in this period.

XXX. Review. Study Problem (509-264 B. C.)

1. Explain how the geography of Italy influenced Roman history. 2. Why was civilization slow in reaching Italy? 3. Had the best harbors of Italy been on the eastern coast, what difference would this have made in the history of the country? 4. Compare early Italian institutions with early Greek institutions. 5. How were the Greeks and the Italians related? 6. Trace on the map the growth of Rome under the kings. 7. Write an out-

line of "The Romans During the Regal Period." 8. Compare regal Rome with Homeric Greece. 9. What wars of the period 509-264 belong to the conflict between the hills and the lowlands? 10. Trace the development of the Roman army to 264. 11. Compare the colonies of Rome with those of Greece. 12. Compare the expansion of Rome in Italy with the expansion of the United States. 13. Was it better for the world that Rome conquered the Samnites? 14. How did the change from monarchy to republic affect (1) the magistrates, (2) the senate, (3) the people? 15. Which was the most popular assembly? Why? 16. What did the plebeians gain by the first secession? 17. Compare the Twelve Tables with the early Greek codes. 18. Trace the growth of the power of the plebeians. 19. Compare a Roman with a Greek assembly; with an American legislature. 20. How did our word "censorious" get its meaning? 21. Make a list of the magistrates of the republic with the duties of each. 22. Changes in the plebeian class (509-264 B. C.). 23. When the patricians were forced to give up an office to the plebeians how were the fruits of victory lessened? 24. Compare the Romans (before 264) with the Greeks as to character. 25. Complete unfinished maps that have been passed over; review all pictures that will illustrate the history of this period.

XXXI. Expansion Outside of Italy (264-133 B. C.).

1. The Punic wars; dates.
2. Causes of the struggle with Carthage.
3. The resources of Rome and Carthage compared.
4. Character and chief events of the wars.
5. Leaders: Regulars, Hamilcar, Hannibal, Fabius, the Scipios.
6. Conquest of Greece by Rome.
7. Territorial results of these wars.

Map: (1) Expansion of Rome about the Mediterranean to 133; (2) route of Hannibal's invasion; (3) mark the places where battles occurred.

Note-book: Outline the life of one of the leaders mentioned above.

XXXII. The Growth of Plutocracy (264-133 B. C.).

1. Roman rule in the provinces.
2. Conditions in Rome and Italy after the Punic wars.
3. The government in 133 B. C.; senate; magistrates; the assemblies.
4. Foreign influences on culture and morals.
5. Scipio and Cato compared.

Note-book: (1) Causes of the decay of Roman character; (2) the Roman senate.

XXXIII. The Beginning of the Revolution: the Gracchi, Marius and Sulla.

1. Need of political and economic reform.
2. Tiberius Gracchus and economic reform.
3. Caius Gracchus and political reform.
4. Why the Gracchi failed.
5. Marius and the new army.
6. The Italians gain Roman citizenship.
7. Marius and Sulla.

Map work: Study all previous maps in the text.

Note-book: (1) The Roman public lands; (2) the work of the Gracchi brothers.

XXXIV-XXXV. The Fall of the Republic: Pompey, Caesar, and Octavius.

1. Pompey to 62 B. C.
2. The conspiracy of Catiline; Cicero.
3. The first triumvirate.
4. Julius Cæsar in Gaul.
5. Civil war. Cæsar vs. Pompey.
6. The government of Cæsar; estimate of his work.
7. Octavius (or Octavianus) becomes sole ruler.
8. Roman civilization in the "Ciceronian age."

Map: (1) Color all provinces added from 133 to 27 B. C.; (2) locate all places mentioned in the lesson

Note-book: Paper on Cicero, Pompey, Cæsar's Army, Cæsar in Gaul, Anthony or Octavius.

XXXVI. Review. Study Problems (264-27 B. C.).

1. Compare Rome and Carthage. 2. Debate this question: "Was the policy of Rome in acquiring territory outside of Italy a wise one?" 3. How did the Romans get a navy? 4. The Carthaginians in Spain. 5. Describe Hannibal's invasion of Italy. 6. Why did he not conquer Rome? 7. Why did Rome interfere in the East? Why did Rome destroy Corinth and Carthage? 8. How did Rome organize the territory conquered outside of Italy? 9. Compare the federal policy of Rome inside Italy with the imperial policy outside. 10. Effects of the Roman conquests upon the Roman people. 11. Conditions making reform necessary. 12. Conditions making peaceful reform practically impossible. 13. Describe each class of Rome about 133 B. C. 14. Bad affects of giving free food to the populace. 15. How did the senate get such control of the Roman government? 16. Compare Cato and Scipio Africanus. 17. Write a history of the peasant class to the death of Caius Gracchus. 18. Why did not the Gracchi rely upon legal methods of reform? Were they justified? 19. What caused them to fail? 20. How does the Jugurthine war show the degradation of Roman character? 21. Make an outline of the military organization from the regal period to the reforms of Marius. 22. Causes of the social war. 23. Why did Rome become illiberal in extending the franchise? 24. What permanent good could be hoped for from the work of Marius or Sulla? 25. Prove that from the time of the Gracchi conditions are tending toward monarchy. 26. What classes would profit by a monarchical government? 27. What did Marius, Sulla, Pompey, and Cæsar each contribute to the development of a monarchy? 28. Suppose Caesar had not conquered Gaul—what then? 29. Was it better that Caesar, not Pompey, won? 30. Compare Caesar and Caius Gracchus as reformers. 31. Why did the republic fall? 32. Why was a monarchy less oppressive to the empire than the rule of the aristocracy had been?

XXXVII. The Empire: The Julian Emperor (27 B. C.- 41 A. D.)

1. The dyarchy; the rule of two—the emperor and the senate.
2. The task of the emperor; the frontiers; the provinces.

3. Authority and policy of Augustus.
4. Public works of Augustus.
5. Literature of the Augustan age.
6. The succession; Tiberius; the position of the senate.

Map work; Make a map of the Roman Empire in 14 A. D., marking the boundaries of each province and coloring red the frontiers that were dangerous.

Note-book; Outline "Benefits of the imperial rule."

XXXVIII. From Dyarchy to Monarchy; *the* Claudian and Flavian Emperors (41-96 A. D.)

1. Claudius; extends the franchise; public works; strengthens the monarchy.
2. Nero; Seneca; the burning of Rome.
3. Vespasian, Titus, and Domitian; the destruction of Jerusalem; public works; destruction of Pompeii; centralization of authority in the emperor.

Map: Color the senatorial provinces red and the imperial provinces blue.

Note-book: (1) The destruction of Jerusalem: (2) Nero and the Christians.

XXXIX. The Five Good Emperors: the Limited Monarchy (96-180 A. D.)

1. Why called the "good emperors."
2. Additions to the empire: Dacia; the East.
3. Administration of Trajan.
4. Administration of Hadrian.
5. Administration of Marcus Aurelius.
6. The early Christians.
7. Public works of the period; architecture; sculpture.
8. Literature: the "Silver age."

Map: (1) Mark the additions to the empire made under the "Good Emperor"; (2) the fortifications of Hadrian.

Note-book: (1) Marcus Aurelius; (2) the early Christians.

XL. Review. Study Problems (27 B. C.-180 A. D.)

1. What classes lost and what gained by the establishment of the new monarchy? 2. Compare the government of Augustus

with that of Cæsar. 3. Why was suicide common at this period? 4. Compare the public works of Rome with those of Greece. Which were the more useful? 5. What republican forms and institutions survived under Augustus? 6. Why was the senate unfriendly to the emperor? 7. Were the provinces better governed under the republic or under the empire? 8. How did Rome benefit the countries she conquered? 9. Were the advantages of Roman rule greater than the disadvantages? 10. Why did the emperors not continue to expand the Roman Empire? 11. Write a history of slavery to the time of Nero. 12. Show how the provincials became more influential in Roman affairs. 13. Outline the history of the extension of the citizenship. 14. Explain this: "Like their god Janus, the Roman emperors have a double face." 15. Prove that Rome improved morally between the time of the Gracchi and the time of Marcus Aurelius. 16. Can you account for the fact that the good emperors most severely persecuted the Christians? 17. What frontiers were in danger? 18. If you had been a provincial which would you have preferred, the empire or the republic? Why? 19. Why were the Christians so disliked? 20. Compare the imperial authority under Marcus Aurelius with that under Augustus. 21. Write a paper on Roman architecture. 22. Write a paper on Roman sculpture.

XLI. A Century of Revolution: the Barrack Emperors (180-284 A. D.)

1. Causes: lack of law of succession; reliance upon the army; the Pretorian Guard.

2. Ceptimus Severus and Caracalia: administration; the jurists; extension of the franchise; taxation.

3. The "Thirty Tyrants;" the barbarian invasions.

4. Aurelian restores order.

5. Loss of territory and prestige; significance of the building of walls.

Map work: Mark on an outline map (1) all places mentioned; (2) territory lost by the Roman emperor before Aurelian.

Note-book: Outline (1) causes of the decline of the Roman Empire; the Pretorian Guard.

XLII. From Diocletian to Constantine: Absolute Monarchy (284-337 A. D.)

1. Reorganization of the empire under Diocletian: the four rulers and their duties.

2. Constantine and the removal of the capitol. Significance of this removal.

3. Christianity, a state religion.

4. Causes of the decline of Rome.

5. The decline of culture.

Map work: Map of the Roman Empire, showing the prefectures and dioceses about 305.

Note-book: (1) Constantinople; (2) Constantine; (3) Diocletian; (4) the rise of Christianity.

XLIII. The Barbarian Invasion and the Fall of the Western Empire (337-475 A. D.)

1. Julian the apostate; Theodosius.

2. The Germans; character; civilization; tribes.

3. Germans come into empire (1) gradually and peacefully; (2) hostile invasions.

4. Alaric, Stilicho, Gaiseric, Attila.

5. The end of the empire of the west.

6. Why the empire "fell."

Map work: (1) Locate the German tribes in their original homes; (2) show their lines of march in the Roman Empire; (3) the places where they settled.

Note-book: (1) The early Germans; (2) Julian the apostate; (3) a German invasion.

XLIV. The Bararian States.

1. Condition of Europe about 476.

2. The barbarian kingdoms; government; the two peoples; religion.

3. Influence of Rome upon the barbarians.

4. Results of the invasions; religion; fusion of peoples; barbarian codes of law.

Map: The German states about 525.

Note-book: (1) Theodoric; (2) Arianism.

XLV. The Eastern Empire; Charlemagne's Empire.

1. Justinian; the civil law; his wars.
2. Lombards; Anglo-Saxons.
3. The Franks and the Pope; the Mohammedans.
4. Charlemagne's Empire.

Map: (1) Charlemagne's Empire; (2) the Eastern Empire of Justinian's time.

Note-book: (1) The Roman law; (2) the Pope; (3) Charlemagne; (4) Mohammed; (5) iconoclastic controversy.

XLVI. Private and Social Life of the Romans.

1. The family.
2. The Roman house and furniture.
3. Slaves, freedmen, clients.
4. Social life and amusements.
5. Religion; pagan and other religions.
6. Occupations.
7. Morals and manners.
8. Death; funeral customs.
9. Roman schools and education.
10. Dress and ornament.
11. Food and drink.

Pictures: Review all that can be had.

Note-book: Expand the above outline in the note-book. (Read Preston and Dodge's Private Life of the Romans.)

XLVII. Summary of Ancient History.

1. The three fields of ancient history: the Orient, Greece and Rome.
2. Principal divisions of each field; principal dates.
3. The task of the Orient.
4. The civilization of Greece and its influence on later times.
5. The mission of Rome.
6. Influence of the ancient civilizations upon modern culture; religion; art; government; social customs; literature; inventions; sciences; industry; intellectual and moral ideals; law, etc.

XLVIII. Review. Study Problems. (180-800 A. D.)

1. Elements of weakness in the empire before Commodus. 2. New causes of decline 180-284. 3. Account for the great influence of the armies. 4. Why were the frontier walls "monuments of the weakness and decay of Rome?" 5. Compare the Revolution, 133-27 B. C., with the revolution 180-284 A. D. 6. Can you justify the despotism of Diocletian? 7. Why was a new capitol necessary? 8. Why was Christianity made a state religion? 9. Show that the Christian church was organized like the Roman empire. 10. Show that the Germans and Christians weakened the empire. 11. Explain: "The empire was a great tax collecting and barbarian fighting machine." 12. Why did the eastern part of the empire stand so much longer than the western? 13. Why did the Greeks and Romans become civilized before the Germans? 14. Compare the early Germans with the early Greeks and Romans. 15. Relations of the Germans and Romans from Marius to 376 A. D. 16. Origin of the word "vandalism." 17. Causes of the "fall of the Western Empire." 18. Would the people of the time notice the "fall" of Rome? Why? 19. What did the Germans get from the Romans? 20. Why is the period 400-800 called "the Dark Ages?" 21. Prove that the Germans were not hostile to the Roman civilization. 22. Why did the Ostrogoths and the Vandals fail? 23. Prove that Constantinople was the "bulwark of Europe." 24. Which battle was the most important: Marathon, Salamis, Metaurus, Actium, Adranople, Chalons, or Tours? 25. Was Charlemagne a Roman emperor? 26. Compare the empire of Charlemagne with the empire of Diocletian. 27. Who do you think was the most important character of Roman history?

SYLLABUS OF MEDIAEVAL AND MODERN EUROPEAN HISTORY, 800-1905 A. D.

Text: Myers' Mediæval and Modern History. Three times a week. Third year.

The field of Mediæval and Modern History is a vast and complex one. Only the most important subjects can be taught. In teaching the middle ages, emphasize its transitional character and its few great institutions; show how it is related to the

classical past, and how it broadens into modern times; study the Germans, the Church, the Universities, feudalism and chivalry; center the work around these large topics; make it plain that national life hardly existed. In this period pictures are specially useful in aiding to an understanding of the time. In modern history note the change of ideas and ideals, the influence of great inventions, the rise of modern states, the development of international relations, the increasing complexity of social and industrial conditions, the expansion of the civilized world, the spread of intelligence, and the progress of democracy. Constant comparison should be made with frequent reference to earlier periods.

Both teacher and pupil will find Leadbetter's "Outlines and Studies" (published by Ginn & Co.) a useful companion to the text, which it was designed to accompany. The syllabus is to a considerable extent based upon it. Map work is indicated in the syllabus. The Outline Atlases of McKinley or of Atkinson, Mentzer and Grover (free copy to teachers), will be good guides for this work. Much pictorial material is available. See the references to map and picture work in the Ancient History syllabus. The student's note-book should contain the reports made on the topics suggested at the end of each chapter, and either a topical outline of each chapter or the review work written out in full.

REFERENCE LIST.

Robinson, History of Western Europe (Ginn & Co.).

Cheyney, Social and Industrial History of England (Macmillan).

Emerson, Mediæval Europe (Ginn).

Robinson, Readings in European History (Ginn).

Green, Short History of the English People (Harper).

Mathews, The French Revolution (Longmans).

Lowell, Governments and Parties in Continental Europe (Houghton).

Bateson, Mediæval England (Putnam).

McCabe, Abelard (Putnam).

Johnston, Napoleon (Scribner).

MEDIAEVAL AND MODERN HISTORY.

I. General Introduction.

1. Periods of European History (476-1900).
2. Meaning of "Fall of Rome."
3. The chief factors in European civilization: the classical, the Christian church, the Germanic races.

Map work: Review the maps of the later Roman Empire; the Barbarian Invasions.

Note-book: A description of Europe about 500 A. D.

II. Review.

1. Greek contributions to civilizations (Review).
2. Latin contributions to civilization (Review).
3. The Christian Church in the Roman Empire (Review).
4. The Teutonic Races (Review).

III. The German States on Roman Soil.

1. The principal invading tribes and their places of settlement.
2. Relations between German rulers and Roman subjects.
3. Reasons for the special importance of the Franks, the Lombards and the Anglo-Saxons.

Map: The German states about 500 A. D.

Note-book: One of the topics for reports on page 13. Hereafter take subjects for topical reports from the list given at the end of each chapter of the text. In addition to the topical work the note-book should contain an outline analysis of each chapter

IV. The Church.

1. Christian Church after the fall of the Western Empire.
2. The conversion of the Teutonic invaders.
3. Influence of paganism upon Christianity.
4. The monastic orders and their services to civilization.
5. The Papacy and the church organization in the Middle Ages.

Map: Pepin's Gift to the Pope.

V. Fusion of Latin and Teuton.

1. Absorption of the Teutons by the Latins and the rise of Romance nations.
2. The development of Romance languages.
3. The Teutonic legal customs.
4. The influence of Roman law.

VI-VII. Review Topics and Questions.

1. Give some examples of the influence of the physical features of Europe upon its history. 2. Why is the expression "Fall of Rome" misleading? 3. Name the special virtues of the Teutons. 4. Compare the German barbarians with the North American Indians. 5. Picture the march of the Visigoths from the Danube to Spain. 6. Which of the barbarian chiefs showed the most kingly qualities? 7. Account for the success of the Franks. 8. Prove that Clovis was a great leader. 9. Which was "the one purely German nation" that rose upon the wreck of Rome? 10. Debate this: Whether it was better for civilization that the Germans broke up the Roman Empire. 11. Who has been called the "John Eliot of the Germans," and for what reason? 12. Of what political importance to the Franks and the Angles was their conversion to the orthodox Catholic faith? 13. Discuss this: "The missionaries from Ireland laid the cornerstone of Western civilization on the Continent." 14. Account for the rapid spread of monasticism. 15. Estimate the good work of the monasteries. 16. In what ways did the organization of the Church resemble that of the old Roman Empire? 17. Describe the conditions which led the church to assume many functions of civil government. 18. Summarize the German additions to the ancient civilization. 19. Compare the German conquest of Rome with the Roman conquest of Greece. 20. Why was Latin more easily corrupted in the German-Roman provinces than English is to-day by foreigners in the United States? 21. What advantages did Latin have in its struggle with the Teutonic tongue? 22. Prove that the German laws were cruder than the Roman laws. 23. What German institution was the germ of the modern legislature?

VIII. The Eastern Empire.

1. Justinian the lawgiver.
2. The Corpus Juris Civilis.
3. Services of the Eastern Empire to Western Civilization.

Map: Eastern Empire about 550 A. D.

IX. Rise of Mohammedism (622 —).

1. Arabia: the country and the people.
2. The career of Mohammed.
3. The Mohammedan doctrines.
4. Expansion of Moslem power.
5. The civilization of the Saracens: good and evil of their religion.

Map: The Moslem power in 750.

X. Charlemagne's Empire.

1. The Franks and the Pope.
2. Charlemagne as a man and as a ruler.
3. The organization of the Empire.
4. Decline of the Empire.

Map: Mark the boundaries of Charlemagne's Empire; the boundaries of the three Kingdoms at the treaty of Verdun.

XI. The Invasion of Northmen.

1. Characteristics of the Northmen.
2. Expansion and colonization.
3. The Danes in England.
4. Norsemen in France (Normandy).

Map: Scandinavia in the ninth century.

XII-XIII. Review Topics and Questions.

1. What does Europe owe to the Eastern Empire? 2. Prove that Belisarius was a great commander. 3. Explain this statement about Justinian: "A man of Slavonian birth, he ruled over a people who spoke Greek and called themselves Roman, to whom he issued a law book which few of them could either read or understand." 4. What parts of the world are still under the influence of Roman law? 5. How did the Roman law reach Louisiana? 6. Conditions which prepared the way for Moham-

med. 7. Account for the Christian and Jewish elements in the Moslem faith? 8. Why were the Mohammedans such fierce fighters? 9. Compare the work of Boniface with the work of Mohammed. 10. Why were the Mohammedans checked by the Christians more easily in the West than in the East? 11. Prove that Arab Spain was the most enlightened country of the time. 12. The greatest deed of Charles Martel. 13. Why was the alliance of the Papacy with the Franks so important? 14. Was Charlemagne a Frenchman? 15. Make a list of the important things he did. 16. What special interest attaches to the Strasburg Oaths? 17. Reasons for the migration of the Northmen. 18. Where did they settle? 19. Good and bad results of the settlement of Northmen in France and in England.

XIV-XV. Feudalism and Chivalry.

1. The origin and meaning of feudalism.
2. Its essential elements.
3. Relation of lord and vassal.
4. Feudal ceremonies.
5. The condition of the serfs.
6. Result of feudalism.
7. Relation of chivalry to feudalism.
8. Its spirit and ideals.
9. Its influence upon the manners and customs of the time.

XVI. The Norman Conquest of England.

1. Normandy: the place and the people.
2. The extent of Norman power in Europe.
3. William the Conqueror and the conquest of England.
4. Norman rule in England and its results.

   Map: England, 1065 and 1066.

XVII. The Emperors and the Popes (962-1122).

1. Conflicting views as to the relations of Pope and Emperor.
2. The restoration of the Empire and the Papacy.
3. Gregory VII and Henry IV.
4. Questions at issue and the result.

   Map: Holy Roman Empire, 1000 A. D.

XVIII. The Crusades.

1. Causes of the Crusades.
2. The principal Crusades.
3. Crusaders' states in the Holy Land.
4. Results of the Crusades.

Map: Europe and the East, 1095; routes of the principal Crusades.

XIX. Review Topics and Questions.

1. What public need caused the development of feudalism? 2. Explain: "No land without a lord, no lord without land." 3. Show how benefices were "a sort of money." 4. Meaning of the word "vassal" in feudal days and now. 5. How did feudalism weaken the hold of the landlord and the power of the king? 6. Compare government under feudalism with that in Louisiana to-day. 7. Describe the cultivation of land by the serfs. 8. What do you learn about Chivalry from Marmion and Ivanhoe? 9. Compare the tournaments with the games of the Greeks, with the gladitorial combats of the Romans. 10. In what countries did the Northmen (Normans) settle and where did they exert the most influence? 11. Explain fully why William was able to defeat Harold. 12. What features of feudalism did William take care not to introduce into England? 13. What good did the Norman rule do England? 14. What language did the Normans in England speak? the English? 15. Describe the "Bayeux tapestry." 16. Compare the claims to power of Henry IV with those of Gregory VII. In what respects do they conflict? 17. Show how feudalism made trouble between the state and the church. 18. The effect upon Germany of the investure struggle. 19. Conditions in Asia which helped to cause the Crusades. 20. How did the crusades result in strengthening the power of the king of France? In more self-government for the cities of England? 21. Find out the history of the horses of St. Marks. 22. Compare the military religious orders with the monastic orders. 23. Significance of the Children's Crusade. 24. Compare the temper of the early Christians with that of the Crusaders. 25. Make a list of the various motives that actuated the Crusaders.

XX. Church and State (1122-1431).

1. The Papacy at the height of its temporal power.
2. The services of the Mendicant Orders.
3. The "Babylonian Captivity" and its results.
4. The great church councils and their results.

XXI. The Mongol and Ottoman Invasion of Europe (1241-1453).

1. The three invasions: (1) Germans, (2) Saracens, and (3) the Turks and Mongols.
2. Results of the Mongol invasion of Slav territory.
3. Results of the Turkish invasion of Southwestern Empire.

Map: Eastern Europe, 1250 to 1464.

XXII. The Mediaeval Towns.

1. Causes of the development of towns.
2. Industrial and commercial life.
3. Mediæval city organization.
4. The Italian despots and the city republics.
5. Services of the towns to civilization.

Maps: The Hansa Towns; Mediæval Trade Routes.

XXIII. Education and Learning During the Middle Ages.

1. The rise and organization of the Universities.
2. The subjects of study.
3. The methods of instruction.
4. Mediæval student life.
5. Scholasticism and the Schoolmen.
6. The art of the Middle Ages.

XXIV-XXV. Review Topics and Questions.

1. State the questions at issue in the struggle between the kings and the popes during the late Middle Ages. 2. Account for the influence of the mendicant friars. 3. Effects of the removal of the papal seat to Avignon. 4. Causes and results of the Great Schism. 5. Review the text relating to the Church and explain each technical term, as: bull, interdict, benefit of clergy, etc. 6. Why was there so little town life in the early Middle Ages? 7. Why did the kings offer privileges to towns? 8. Compare the gild to the modern trade union and to the trust. 9. Prove

that the business methods of the Middle Ages were unlike those of to-day. 10. Describe the development of a university. 11. What was the difference between a university and a college in the Middle Ages? to-day? 12. Explain: first, second and third estates.

XXVI-XXVII-XXVIII. The Growth of the English Nation to 500.

1. Decline of feudalism and the rise of national states.
2. Saxon, Danish, and Norman England (Review).
3. The Plantagenet period: (a) The six early Plantagenets; (b) Administrative reforms; Magna Charta; (c) Rise of Parliament.
4. The troubles with Scotland.
5. The Hundred Years War.
6. The War of the Roses.
7. English language and literature.

Map: England, 1154 to 1500; the Hundred Years War.

Note: It is suggested that as much time as possible throughout the year be devoted to the history of England, at this point and at pages 334, 420, 480, 599, and 669. Give extra topics and library work.

XXIX-XXX. The Rise of France (987-1328).

1. The Frankish state (Review).
2. The rise of the Capet family; the Valois line.
3. The English influence in France.
4. The struggle between the king and the feudal nobles.
5. The Crusades. The Templars.
6. The consolidation of the state.
7. The French language; troubadours; trouveres.

Map: France, 1180, 1328.

XXXI. Spain and the Middle Ages.

1. The Gothic and the Moorish invasion (Review).
2. The Christian states and the Moorish wars.
3. The Spanish Inquisition.
4. Spanish language and literature.

Map: Spain 1100, 1210, 1492.

XXXII-XXXIII. Germany and Italy in the Late Middle Ages (1000 —).

1. The Frankish Empire (Review).
2. The revival of the Empire: Otto and the Hohenstaufens.
3. The Emperors and the Popes (Review): Results for Germany and Italy.
4. Growth of towns in Germany and Italy.
5. Why no national government in either state?
6. German literature.
7. Italian language and literature.

Northern Europe.

8. Rise of Russia.
9. The Scandinavian states.

XXXIV-XXXV. Review Topics and Questions.

1. The English kings and the papacy. 2. What prevented absolute monarchy in England? 3. Compare Parliament and the estates general. 4. Edward I was called "the English Justinian." Why? 5. Why was the Model Parliament so called? 6. Debate this proposition: "Fortunately for England, she lost her French possessions." 7. In what ways did the Hundred Years War help to end the Middle Ages? 8. Obstacles in the way of the early French kings. 9. Bouvines was the "first modern battle." Explain. 10. What prevented the Estates General from becoming as important as Parliament? 11. Trace the history of our word "Seigniorage." 12. Did the "Third Estate" mean "the people"? 13. Compare Moslem Spain with Christian Spain. 14. For what reason should Queen Isabella be mentioned in American history? 15. King Ferdinand was "the father of international politics." Explain. 16. Why were the Spaniards out of sympathy with other Europeans? 17. Evils of the connection of Germany and Italy. 18. Compare Otto and Charlemagne. 19. Evils of the elective system in Germany. 20. Trace to its origin our word "steelyards." 21. Meaning of the double-headed eagle on the German flag of to-day. 22. Italy was but "a geographical expression." Explain. 23. Why did feudalism never gain a strong hold in Italy? 24. Italy was "an old man of the sea" upon the neck of Germany. Explain. 25. Compare

an Italian despot with an American city "boss." 26. How did the Tartar invasion aid civilization? 27. Why did Constantinople hold out so long after the fall of the Western Empire? 28. Why are the Turks allowed to remain in Europe?

XXXVI-XXXVII-XXXVIII. The Renaissance.

1. What was the Renaissance Movement?
2. Conditions making possible the Italian Renaissance.
3. The literary aspects of the Renaissance: the New Learning; the Humanists; printing.
4. Artistic revival; painting; sculpture; architecture.
5. The geographical discoveries: the New World.
6. Results, good and evil of the Renaissance.

XXXIX. The Protestant Revolution and the Catholic Reformation.

1. Nature and causes of the movement.
2. The Humanists of Germany and England.
3. Tetzel and indulgences.
4. Martin Luther and the German revolution.
5. Catholic reaction: Catholic reformation.
6. Results of the Protestant Revolution and the Catholic Reformation.

XL. Review Questions and Topics.

1. Compare a man of the Middle Ages with a modern man. 2. The Italians were "the first born among the sons of modern Europe." Explain. 3. Explain how the classics influenced the Renaissance. 4. Show how popes and civil rulers aided the Renaissance. 5. Compare the Renaissance in Italy with the Renaissance in Germany, in France. 6. Explain why the Renaissance brought certain pagan influences. 7. Unsolved problems left by the Middle Ages for modern times. 8. Contributions of the Middle Ages to civilization. 9. Trace the history of the jury system. 10. Compare the kingship in France with the kingship in England. 11. What mediæval institutions exist to-day? 12. Conditions which forced the search for a new route to India. 13. What had pepper to do with the discovery of America? 14. Compare Toscanelli's map and Behaim's globe with a modern

map and globe. 15. Why were Spain and Portugal earlier than England and France in exploring and colonizing? 16. Show that the Protestant Revolution was a political and social as well as a religious movement. 17. Compare Luther with Erasmus, with Calvin. 18. Were the Protestants more tolerant than the Catholics? 19. Compare the peasant wars in England and France with the German peasant revolt.

XLI. The Ascendancy of Spain.

1. The Spanish power under Charles V.
2. Charles V and the Protestant Revolution.
3. Charles V and France.
4. Phillip II: character and policy.
5. Decline of Spain.

Map: The Possessions of Charles V.

XLII-XLIII. England Under the Tudors.

1. England before the Tudors (Review).
2. Henry VII founds a strong monarchy.
3. Henry VIII and the breach with Rome.
4. Edward VI and Radical Protestantism.
5. Mary and the Catholic reaction.
6. The reign of Elizabeth.
7. Elizabethan literature.

XLIV. The Rise of the Dutch Republic.

1. The Netherlands: the country; the people.
2. Revolt from Spain.
3. William of Orange.
4. Wars and independence.

XLV. Review Topics and Questions.

1. Meaning of "balance of power." 2. Causes of dispute between Francis I and Charles V. 3. Causes of the decline of Spain. 4. An estimate of Henry VIII. 5. Causes, immediate and remote, of the separation of the English from the Roman church. 6. Prove that Elizabeth was a great ruler. 7. Make a list of the great men of her time. 8. Causes of the revolt of the Low Countries. 9. Compare William of Orange and George Washington.

XLVI. Religious Wars in France.

1. The Protestant Revolution in France.
2. Position of the Huguenots in the state.
3. Religious wars and the Edict of Nantes.
4. The reign of Henry IV.
5. Richelieu and the Huguenots.

XLVII. The Thirty Years War.

1. Causes and general character of the war.
2. The four periods of the war.
3. The peace of Westphalia.
4. Results of the Thirty Years War.

XLVIII. Review Topics.

1. Causes of the growth of the Huguenots. 2. How did the Huguenots become a political party? 3. Character of the religious wars in France. 4. Show that the independent political power of the Huguenots was dangerous to France. 5. Causes of the Thirty Years War. 6. Motives of the several combatants. 7. Make a list of the results of the war.

XLIX. The Age of Absolute Monarchy.

1. The doctrine of the divine right of kings.
2. The enlightened despots.

France Under Louis XIV.

1. France before Louis XIV (Review).
2. Louis XIV: character and aims.
3. The wars of Louis XIV.
4. France in America.
5. Court of Louis XIV.
6. Causes of decline after Louis XIV.

L-LI-LII. The Stuarts and the Political Revolution in England.

1. The Tudor period (Review).
2. James I and Parliament.
3. Colonization in America.
4. Charles I and Parliament.
5. The Civil War.

6. The Commonwealth and the Protectorate.
7. The Restoration; Charles II.
8. Despotism of James II.
9. The revolution of 1688.
   Map: England at the beginning of the Civil Wars, showing territory held by the king and territory held by Parliament.

LIII. Review Topics and Questions.

1. Conditions which led many people to prefer absolutism. 2. Compare the nobles of England with those of France. 3. Prove that Louis XIV was not as great as Henry IV, his grandfather. 4. Account for the weakness of the French colonies. 5. Compare James I and Louis XIV. 6. What advantage as to power had a French king over an English king? 7. Can you justify the execution of Charles I? 8. Why did the Commonwealth and Protectorate fail? 9. Results of the Puritan Revolution and the Revolution of 1688.

LIV. Rise of Russia.

1. Russia before Peter the Great (Review).
2. Peter the Great: character and aims.
3. War between Russia and Sweden.
4. Catherine the Great.
5. Expansion of Russia.
   Map: Rise of Russia.

LV. Rise of Prussia.

1. The beginning of Prussia (Review).
2. The great Elector Frederick William.
3. Unification and expansion of Prussia.
4. Frederick the Great, enlightened despot.
   Map: Rise of Prussia.

LVI-LVII. The Expansion of England.

1. Queen Anne and the House of Hanover.
2. The English expansion into America.
3. Expansion into India.
4. Conditions in Europe affecting the colonies.
5. Growth of cabinet government.

6. Moral reform: Methodist movement; slave trade abolished, etc.
7. The American Revolution.
8. The industrial revolution.
   Map: British Empire in 1713, 1765, and 1785.

LVIII. Review Topics and Questions.

1. What made Russia more Asiatic than European? 2. Prove that Peter was a great ruler. 3. Prove that, judged by our standards, he was a bad man morally. 4. Why did he want "a window to the west"? 5. How did the Crusades influence Prussia? 6. Compare Frederick the Great with Louis XIV, with Peter the Great. 7. Criticise Frederick's policy toward Maria Theresa. 8. Trace the development of English sea power. 9. What enabled England to conquer the French colonies? 10. Was it better for civilization that the American colonies won their independence? 11. Compare the English Cabinet with the American.

LIX-LX. The French Revolution.

1. The government of the benevolent despots; their theories (Review).
2. Conditions in France causing the Revolution.
3. The Estates-General and the National Assembly (1789-1791): The First French Constitution.
4. The Legislative Assembly (1791-1792).
5. The National Convention (1792-1795).
6. The Terror (1793-1794).
7. The Directory (1795-1799).
   Map: Europe in 1789.

LXI-LXII. Napoleon.

1 The Consulate (1799-1804).
2. The constructive work of Napoleon.
3. The French Empire (1804-1815).
4. Napoleon's wars.
5. The Continental System.
6. The national reaction against Napoleon.
7. An estimate of Napoleon and his work.
   Map: The French Empire, 1811.

LXIII. Review Topics.

1. Prove that the French people in 1789 were in no worse condition than others. 2. Why did the Revolution begin in France? 3. What countries felt the Revolution? 4. Account for Napoleon's rapid rise. 7. Why did he sell Louisiana? 8. Explain why Napoleon failed. 9. What of his work has lasted? 10. Sum up the results of the Revolution.

LXIV. The Reaction: the Age of Metternich.

1. The Restoration: Louis XVIII and Charles X.
2. The Revolution of 1848 and the second republic.
3. The second empire.
4. The third republic.

LXVI. England in the Nineteenth Century.

1. Growth of Democracy.
2. Removal of religious disabilities.
3. The Irish question.
4. Economic reform.

Map: British Empire in 1905.

LXVII. Review Topics and Questions.

1. Prove that the Congress of Vienna was reactionary; that it was unwise. 2. State the views of Metternich and compare them with those of Americans. 3. Compare Europe of 1815 with Europe of 1905. 4. Why was France so long in settling down to a stable government? 5. Compare the revolutions of 1830 and 1848 with the revolution of 1789-1815. 6. England has been "a political model for Europe." Explain. 7. Why do we find reform instead of revolution in England? 8. Make a list of English reforms during the nineteenth century. 9. Why are there more Irish than English in America?

LXVIII. Spain in the Nineteenth Century.

1. Spain during the French revolution (Review.)
2. The revolution of the Spanish colonies in America.
3. The Holy Alliance and the Monroe Doctrine.
4. The Spanish-American War, 1898.

Map: The Spanish possessions, 1815, 1905.

LXIX. The Unification of Italy.

1. Italy in 1815.
2. Struggle against Austrian rule.
3. The leadership of the House of Piedmont.
4. The gradual unification of Italy.
5. The Papacy and the Italian state.
6. Italy of to-day.

LXX. The Unification of Germany.

1. Germany in 1815.
2. The struggle for liberty and union, 1815-1848.
3. Policy of William I and Bismarck.
4. Wars with Austria and France.
5. Germany since 1871.

LXXI. Austria-Hungary.

1. Austria in the German Confederation (1815-1866).
2. The Revolution of 1848.
3. The War of 1866.
4. The race question.

Map: Races in Austria-Hungary.

LXXII. Russia Since 1815.

1. Alexander I.
2. Policy of Nicholas I.
3. The Polish question.
4. The emancipation of the serfs.
5. The Eastern question.
6. Nihilism and absolutism.
7. The War with Japan.

Map: Russian Empire. 1900; Europe of to-day.

LXXIII. Review Topics and Questions.

1. Trace the development of Italian unity. 2. Meaning of "Italia fara da se"? 3. Compare Mazzini with Garibaldi, with Cavour. 4. What is the "Roman Question"? 5. How did Germany become a consolidated state? 6. Why did so many Germans come to America, 1848-1852? 7. Compare Bismarck and Cavour. 8. Compare the German government with the American. 9. Reasons for Spain's backwardness in the nineteenth

century. 10. How did Switzerland become a real state? 11. In what respects is Russia backward? Why? 12. What is "*The Eastern Question*"? Meaning of "*The Sick Man of Europe*"? 14. Are the Russians capable of self-government?

LXXIV-LXXVI. Expansion of Europe in the Nineteenth Century.

1. The revival of interest in colonial expansion.
2. The partition of Africa.
3. England in America, Asia, Africa, Australia.
4. France in Africa and Asia.
5. Germany in Africa and Asia; China.
6. Russian expansion to the East; the trans-Siberian Railway.
7. The expansion of the United States.
8. Problems: China, Japan, the civilization of the advanced and backward races.

Maps: Color a world map for each colonial empire.

LXXVII. The New Age.

1. The Hague Conference.
2. The Labor Problem.
3. Socialism.

LXXVIII. Review Topics and Questions.

1. Why do the European states desire colonies? 2. Name the great colonial powers with their possessions. 3. Criticise the colonial policies of Belgium, Germany, France, United States, England. 4. Prove that the Boers were behind the times. 5. Show how the desire for expansion may result in international complications. 6. How much of the world has been civilized during the nineteenth century? 7. Compare the world of to-day with the world of 1800; the world of 1800 with the world of Charlemagne. Which is the greatest contrast?

SYLLABUS OF AMERICAN HISTORY.

Text: Stephenson's American History. Fourth year; 3 periods a week. Civics 2 periods.

American institutions and the American people are of European origin; Colonial America was merely an expansion of

Europe into the New World. So American history should be studied and taught as closely related to European history. The habits, customs, ideas and institutions of the Americans until the nineteenth century were those of France, Spain and England, modified by the changed environment of America. And since the beginning of the nineteenth century there has not been a great deal that is distinctly new in American life. The European background then must be understood or the full significance of American history will be missed. The European conditions affecting exploration and colonization, the tremendous fact of the substitution of the Atlantic for the Mediterranean as the center of the civilized world, the transplanting of European institutions and the development of these in the New World, the modification of old customs and the beginning of new ones, the conquest of material obstacles—these are the significant topics in early American history. The influence of geographical conditions should be constantly emphasized, and the study of wars and battles subordinated to the study of institutions, ideas, and ideals. Throughout the work there should be comparison of earlier and later conditions, events and characters, and frequent reference to and use of history work already done. Much more reading can be done in this course than in previous courses.

Note-book work, map making and map study, the use of pictures and other aids have been described in the preceding syllabus on Ancient History. Either the McKinley Atlas of United States History or the Ivanhoe Historical Note-book will be useful as a guide in historical geography.

REFERENCE LIST.

Wilson, History of the American People. (Harper & Bros., New York.)

Fiske, American History; Old Virginia and Her Neighbors; New England; Dutch and Quaker Colonies; American Revolution; Critical Period. (Houghton, Mifflin & Co., Boston.)

Hart, Source Readers; Source Book; American History Told by Contemporaries. (Macmillan Company, Atlanta, Ga.)

Fleming, Documentary History of Reconstruction. (A. H. Clark Company, Cleveland, Ohio.)

Andrews, Our Own Time. (Scribners, New York.)
Earle, Home Life in Colonial Days. (Macmillan, Atlanta.)
Smedes, A Southern Planter. (James Pott, New York.)

AMERICAN HISTORY.

I. The Period of Discovery.

1. What the ancients knew about geography.
2. What the people of the later Middle Ages (1450) knew about geography.
3. The Norse explorations.
4. Conditions in Europe which led to the discovery by Columbus.
5. Columbus: character, discoveries, career.
6. Explorations and early settlements: (a) Spanish; (b) French; (c) English.

   Maps: The known world about 800, 1450, 1600; the voyages of discovery; the first settlements of the Spanish, French, English.

   Note-book: Outline each chapter and make summaries of readings.

II. The Indians of North America.

1. Numbers and location.
2. Character; civilization.
3. Relations with the whites.

III. The Southern Colonies.

1. Conditions in England which induced colonization.
2. Methods of colonization.
3. Virginia, a typical southern colony: (a) settlers; (b) occupations; (c) labor question; (d) government.
4. Maryland: government; religion.
5. Carolinas: peculiar constitution.
6. Georgia: twofold object.
7. Relations with Indians.
8. Life in the southern colonies.

   Map: The Southern Colonies in 1650, 1750.

IV. The New England Colonies.

1. The Pilgrims and the Puritans: character, religion, position in England.
2. Plymouth and Massachusetts Bay; Connecticut, Rhode Island.
3. Colonial government in New England.
4. Education and the Church; the Quakers.
5. Home life in New England.
6. Compare New England with the South as to character of settlers, government, occupations, religion, etc.
7. The geography of New England compared with that of the South.

   Map: The New England Colonies, 1650, 1750.

V. The Middle Colonies.

1. New York: (a) The Dutch Settlers and their institutions and customs; (b) the English conquest; (c) growth of self-government.
2. Pennsylvania, "a Quaker Experiment": (a) The Friends and their principles; (b) William Penn; (c) the Pennsylvania government.
3. New Jersey and Delaware.
4. Life among the Dutch and Quakers.

   Map: The Middle Colonies, 1750.

VI. The Spanish in America.

1. Location of their colonies.
2. Motives of colonists.
3. Spanish colonial government.
4. Policy toward natives.

   Map: Spanish possessions in the New World, 1750, 1765, 1825, 1900.

VII. The French in America.

1. Canada and Louisiana.
2. Settlers; missionaries and traders.
3. Policy toward natives.

   Map: French possessions, 1765.

VIII. The Struggle Between France and England.

1. Location of the colonies of France and England.
2. Causes of wars.
3. The four intercolonial wars.
4. The English conquest.

   Map: Locate battles and trace campaigns; North America in 1756 and 1765.

IX. English Colonial Development to 1750.

1. Political development: representative government; taxation; charters; attempts at union.
2. Economic development.
3. Social progress.
4. Conditions, social, economic and political, about 1765.
5. Home life in the colonies.

X. Review Topics and Questions.

1. Knowledge of geography in 800, 1450, 1500. Why did Europeans want to get to India? What had the Chinese to do with the discovery of America? Pepper and spices? The Turks? 4. Prove that England secured the best part of America. 5. Show why the Englishman and the Indian could not live together peaceably. 6. Why did the Indians like the French better? 7. Was "representative government" in Virginia an experiment? 8. Show that each colonial government resembled the English government. 9. Point out the differences in the case of each colony. 10. Motives which induced people to come to America. 11. Classes of people who came. Different nationalities. 12. Make a list of causes of dispute between colonists and their governors. 13. Different religious sects in America about 1750. 14. Compare the plantation life of the South with the town life of New England. 15. How did physical geography influence colonial history? 16. Compare a colonial charter with a state constitution. 17. Different forms of colonial government. 18. In what respects were they like the modern state governments? 19. Make a list of things now common that the colonists did not have. 20. Why has it always been easier to have schools in the North than in the South? 21. Prove that religious toleration has not always existed in

America. 22. Influence of tobacco in colonial life. 23. What made North Carolina unlike South Carolina? 24. Compare the colonial history and government of Louisiana with that of Virginia. 25. Prove that the English colonies gradually drew toward union before 1775. 26. Which colony would you have preferred to live in? Why?

XI. Causes of the Revolution.

1. Underlying causes: distance from England; different social and economic and political ideals and conditions.
2. Immediate causes: revision of laws relating to navigation and trade, taxation, etc.

XII. The Revolution.

1. The campaign in New England.
2. The campaign in the Middle Colonies.
3. The end of the war in the South.
4. Growth of the idea of independence; the declaration.
5. Government during the Revolution.
6. Washington.
7. Results of the Revolution.

   Map: The three fields of campaign with dates; the United States in 1783.

XIII. The Critical Period (1783-89).

1. The Articles of Confederation.
2. Turbulence and disorder in the states.
3. Weakness of the government.
4. The westward movement.
5. The Convention of 1787 and the new Constitution.

XIV. The Country in 1789.

1. Territory and population.
2. Agriculture and other occupations.
3. Government and laws.
4. Life in Washington's time.

   Map: The United States in 1789.

XV. Federalist Supremacy.

1. Federalist and Anti-Federalist.
2. Washington's administration.

3. The organization of the new government.
4. Foreign affairs.
5. John Adams and the fall of the Federalists.

XVI. The Jeffersonian Republicans (1801-1817).

1. The growth of the West.
2. Jefferson's views and policy.
3. The courts and impeachments.
4. Struggle for neutral rights.
5. Purchase of Louisiana.
6. Madison.
7. The Young Republicans and the War of 1812.
   Map: United States in 1809; the battles and campaigns of the War of 1812.

XVII. Social and Economic Conditions After the War of 1812.

1. Westward expansion.
2. Economic development. The tariff.
3. The cotton gin and slavery.
4. Social conditions.

XVIII. Review Topics and Questions.

1. Make a list of the remote general causes of the American Revolution; of the immediate causes. 2. Does the Declaration of Independence give the causes accurately? 3. Can you justify the conduct of the Tories? 4. Resources of the colonies for carrying on war. 5. Prove that Washington was the greatest man of the war. 6. Prove that the fighting in the South was the most important of the Revolution. 7. Make a list of the defects of the Articles of Confederation. 8. How did the public lands help to hold the states together? 9. Prove that 1783 to 1789 was a "critical period." 10. Compare the government under the Constitution with that under the confederation. 11. Compare the United States of 1789 with the United States of 1900. 12. What English elements has our Constitution? What original elements? 13. What is the difference between making a law and making a treaty? 14. Compare the political views of Washington with those of Andrew Jackson. 15. Difference between

the Federalists and the Anti-Federalists. 16. Prove that the purchase of Louisiana was wise. 17. How did the war of 1812 cause the development of American manufactures? 18. Make a list of results of the war of 1812. 19. How did the Revolution and the War of 1812 affect Louisiana?

XIX. Monroe and Adams Administrations (1817-1829).

1. The "American Theory."
2. The second national bank, 1816.
3. Internal improvements.
4. Slavery and the Missouri Compromise.
5. The Monroe Doctrine.
6. The states and the Indians.
7. Rise of political parties.

Map: Slave states, 1789-1821.

XX. Jacksonian Democracy (1829-45).

1. Political views of the westerners; Jackson a representative.
2. New political methods.
3. The spoils system.
4. The bank controversy and other financial questions.
5. Nullification.
6. Abolition agitation.
7. Crisis of 1837.
8. Political parties and platforms (1829-45).

Map: United States in 1825, 1845.

XXI. The Mexican War and Anti-Slavery Agitation.

1. Early Southern opposition to slavery.
2. The emancipationists vs. the abolitionists.
3. The annexation of Texas.
4. The war with Mexico.
5. The Wilmot proviso and the struggle over slavery in the territories.
6. Compromise of 1850; personal liberty laws.
7. Underground railroad; the Kansas-Nebraska troubles.
8. The Republican party.
9. Dred Scott Decision.

10. The Lincoln-Douglas debates.
11. John Brown raid.

Maps: The United States in 1840, 1845, 1850, 1860; presidential elections, 1852, 1856, 1860.

XXII. The United States in 1850.

1. Territory and population.
2. Travel and communication.
3. Gold as a factor in expansion.
4. Commerce and industry.
5. Cities and city life.
6. Inventions and discoveries.
7. Intellectual progress.

XXIII. Review Topics and Questions.

1. Why did the North not oppose the admission of Alabama, and later oppose the admission of Missouri? 2. What part of the country demanded "internal improvements"? 3. Compare J. Q. Adams with Andrew Jackson. 4. Compare the West with the East; the Jackson Democrats with the former Jefferson Republicans. 5. Why were the new states more democratic than the old ones? 6. How did the "spoils system" injure the government? 7. Make a list of the new political methods used by the Jackson Democrats. 8. What inventions of importance were so used as to increase the difference between North and South? 9. Make a list of the differences between North and South about 1835. Consider climate, soil, occupations, products, etc. 10. Why was there more manufacturing in the North than in the South? 11. Reasons why Texas was annexed to the United States. 12. Account for the rise of abolition sentiment. 13. Compare their abolition sentiments with those of the Southern people. 14. What did most of the Northern people think of slavery, 1835-1860? 15. Prove that Lincoln did not, in 1861, intend to destroy slavery. 16. What was the meaning of John Brown's raid? 17. Why did the growth of the Republican party so alarm the South?

XXIV. Secession and Beginning of the Civil War.

1. Causes of secession.
2. The Confederate government.
3. Attempts to compromise.
4. The policies of the two presidents.
5. Fort Sumter and the beginning of the war.

   Map: Showing (1) seceding states; (2) Union slave states; (3) Union free states.

XXV. The Civil War.

1. The resources of North and South compared.
2. The general plan of campaign of the North; of the South.
3. The principal armies and their leaders.
4. The principal campaigns and their results by years.
5. The war on the sea.
6. Foreign affairs.
7. The negro question during the war.
8. Northern and Southern finances.
9. Northern oppostion to the war.
10. Life in the Confederacy.
11. Results of the war as to slavery, secession, and state sovereignty.

    Map: (1) The Principal campaigns and battles; (2) the Confederacy at the end of each year.

XXVI. The Beginning of Reconstruction.

1. Lincoln's and Johnson's plans.
2. Opposition by Congress.
3. The fight between Congress and the President.
4. Attempt to remove President Johnson.

   Map: The United States showing (1) the states with representation in Congress, 1865-68, and the states without representation.

XXVII. Reconstruction in the South.

1. The congressional plan and the Reconstruction Acts of 1867.
2. The Freedmen's Bureau.
3. Carpet-bag government in the South.

4. The amendments to the Constitution.
5. The Union League and Ku Klux Klan.
6. The election of 1876 and the overthrow of Reconstruction.
   Map: The five military districts, 1867-1868.

XXVIII. Reconstruction Period in the North (1865-76).

1. Conditions after the war.
2. Politics 1865-76.
3. Westward expansion and the admission of new states.
4. The French in Mexico and the Monroe Doctrine.
5. The Alabama claims.
6. The Atlantic cable and the Pacific railroad.
7. Corruption in office.
8. Financial affairs (1865-76).
   Map: United States in 1876.

XXIX. Review Topics and Questions.

1. Make a list of the causes of secession. 2. Compare the Confederate Constitution with the Federal Constitution. 3. Account for the fact that England sympathized with the South. 4. Prove that the capture of New Orleans and of Vicksburg were very important events. 5. Make a list of the causes of the success of the North. 7. Why were the Southern mountaineers disloyal to the South? 8. Make a list of the ways in which the South suffered more than the North. 9. Make a list of the results of the war. 10. How did Congress punish the Southern people? 11. Prove that Lincoln had different plans. 12. Why were the negro carpet-bag governments so bad? 13. Was the Ku Klux movement justified? 14. Do the negroes vote now? Why? 15. Make a list of the causes of the failure of Reconstruction. 16. Was the electoral dispute of 1876 properly settled? Prove your answer.

XXX. The United States in 1877-1885.

1. Self-government restored in the South.
2. Civil service reform.
3. Finances.
4. Capital and labor.
5. The new South and its problems.
   Map: United States in 1885.

XXXI. The United States (1885-1897).

1. Grover Cleveland's Administration, 1885-1889.
2. The Chicago anarchists.
3. Important legislation; electoral count; presidential succession; interstate commerce.
4. The tariff question.
5. The silver coinage struggle.
6. The Farmers' Alliance and the Populist party.
7. Labor troubles.
8. Foreign affairs.
9. Cleveland and the civil service.

Map: United States, 1897.

XXXII. The Expansion of the United States.

1. The war with Spain.
2. Annexation of territory.
3. Philippine problem.
4. Cuban problem
5. The Panama Canal.

Map: The United States in 1900.

XXXIII. Present Problems.

1. The trust problem.
2. Relations between capital and labor.
3. The race question in the South.
4. The regulation of railroads and interstate commerce.
5. The tariff question.
6. Problems of city government.
7. Government of colonies.
8. Immigration.
9. Relations with South America.
10. Our position in the East: the open door to China.
11. Conservation of natural resources.
12. Suffrage and ballot reform.

XXXIV. Summary and Review of American History.

1. Territorial expansion since 1607.
2. Increase of population.
3. Development of government since 1607.

4. English elements in American institutions.
5. Progress of democracy.
6. Economic progress.
7. Development of political parties.
8. Religious conditions in America as compared with Europe.
9. Social progress since colonial times.

XXXV. Review Topics and Questions.

1. What is meant by the demonetization of silver? Bimetalism? Free coinage of silver? 2. Principles of the Greenback party. 3. Explain the causes of the Farmers' Alliance movement and the rise of the People's party. 4. To what extent has civil service reform been accomplished? 5. What order of precedence was established by the Presidential Succession Act? 6. Compare the views of the Democrats on the tariff with those of the Republicans in 1889. 7. What was the Homestead law and what were its results? 8. Compare the South of 1900 with the South of 1860. 9. Make a list of the inventions, improvements, etc., that have influenced America since 1800. 10. Should we hold the Philippines or give them independence? 11. What is the trust problem? 12. What is meant by the "open door" in China? 13. Make a list of arbitrations to which the United States has been a party. 14. Write a history of manufacturing in America. 15. A history of the staple crops in America. 16. A history of the negroes. 17. Problems of immigration. 18. Make a list of things in which progress has been made since 1800. Compare the United States with European states.

HISTORY LIBRARY LIST.

The following list of books is recommended for the high school library, to supply needed references for the courses in high school history:

Ancient History.

1—Plutarch's Lives, five volumes.....$7.50
2—Gulick's Life of the Ancient Greeks, Appleton publisher 1.50
3—Johnston's Private Life of the Romans, Scott publisher 1.50

Mediaeval and Modern History.

1—Einhard's Life of Charlemagne, Harper publisher .... .30
2—Munro and Sellery's Mediaeval Civilization, Century Company, publishers 1.00
3—Mathews' French Revolution, Longmans publisher.... .20
4—Johnston's Napoleon, Holt publisher..... 1.25
5—Green's Short History of England..... 1.00

United States History.

1—Sparks' Expansion of the American People, Scott, publisher ..... .60
2—Earle's Home Life in Colonial Days, Crosset & Dunlap, publishers ..... .75
3—Eggleston's History of American Life, two volumes, Barnes, publisher 2.25
4—Hart's Source Readers, four volumes..... 2.50
5—Eggleston's Southern Soldier Stories, Macmillan, publisher 1.50
6—Andrews' History of the United States in Our Own Times 3.50

CIVIL GOVERNMENT.

Text: Boynton, School Civics. Twice a week. Fourth year.

No syllabus in Civil Government is needed. The titles printed in black-faced type in the adopted text serve admirably to outline the work. The search questions at the end of each chapter should all be worked out in the note-book. The object of instruction in Civil Government is to show how government was developed, how it is framed and how it actually operates, and under what conditions good government is assured. The work in this subject aims to impart that knowledge of our political institutions that every good citizen should have in order to take an intelligent interest in public affairs. History must constantly be called upon to explain the origin of political institutions and to furnish illustrations. Much about governmental development will have been learned from history. Colonial governments, local government in the colonies, charters, taxation, the Confederation, the Constitution, the courts, Congress, im-

peachment, treaty making, arbitration, government of dependencies—these are a few of the subjects studied in American History. To be worth much the work in Civil Government must be practical as well as theoretical. The actual operation of the machinery should be shown as much as possible. Elections, primaries, conventions, party organizations and platforms, sessions of the Legislature, meetings of city councils, of school boards, etc., afford opportunity for the practical study of government.

REFERENCE LIST.

Ashley, Federal State. (Macmillan Company, Atlanta, Ga.)
Bryce, American Commonwealth. (Macmillan Company, Atlanta.)
Hart, Actual Government. (Longmans, New York.)
Johnston, History of American Politics. (Holt, New York.)
MacDonald, Select Documents Illustrative of American History. (Macmillan Company, Atlanta.)

Music.

MATERIAL.

"Alternate Third Book" reviewed and completed. As the work advances Beacon's Song Book No. 2 will be needed.

METHOD.

The principal part of the work is chorus singing. Where the pupils have had music through the grades, little attention should be given to formal study of the elements of music. Special attention should be given to the singing of unison songs. There are a number of these songs in the Alternate Third Book.

Practically the only new problem for this grade is the introduction of the bass clef. Where the sight reading has been properly taught, reading from the bass clef will be a very simple matter. The directions for studying the voices and arranging the parts for song singing in the lower grades should be followed in the high school.

It is essential that the pupils in the high school should be led to sing their songs and choruses in an interesting manner. They should interpret these songs and choruses with a fair degree of musical appreciation. Encourage all pupils to take part in chorus work. Added interest may be aroused by the formation of glee clubs, boys' choruses and semi-choruses of girls' voices.

One unit will be allowed for music and drawing if the subjects are pursued for the four years under the direction of a special teacher.

Drawing.

INTRODUCTORY NOTE.—These outlines are based upon the supposition that two periods a week, of forty minutes each, are given throughout the entire course. It is felt that a course in art study for the high school should be general enough in its character to equip, as far as is possible, the student who may have but one year of high school training with an understanding of such art principles as will have a direct bearing upon his life. Every person of education should understand something of the growth of plants and flowers; of landscape shapes and effects; of the representation of the forms, proportions and colors of objects; of the language of constructive drawing, and of the commoner geometric problems; and finally of the principles of design, which are universal in their application. This reasoning is from the standpoint of *general* education.

Teachers should refer to the "General Directions" in the Course of Study for Elementary Schools.

ART EDUCATION DRAWING BOOK COURSE.

BOOK EIGHT.

FIRST YEAR IN HIGH SCHOOL.

(Eighth Grade.)

SEPTEMBER.

Teacher should read "General Suggestions" on inside cover of Drawing Book and select paragraphs adapted to page 4, for the pupil to study.

Study page 4. Point out the important features of the lesson, making sure that the class has studied and understood the work. Pupils should refer to "Glossary of Terms" in back of book for meaning of expressions not understood. Encourage the use of art terms in the discussion of all work in drawing. Practice sketches similar to illustrations shown on page 4, using shadow-box. When work is satisfactory, draw or mount on page 5.

Discuss text on page 6; also study Illustration A, page 39. Mount one or two best color sketches on page 7.

Study page 8, Exercise III. A careful study of the text by each pupil is essential. Devote one lesson to oral discussion of text and sketches. Make large, free sketches from pomegranate. Continue work similar to that suggested in Exercise III, and complete as many good sketches as possible from nature.

OCTOBER.

Use finder for pleasing arrangement from sketches made during last month. Mount best work on page 9.

Study page 10, Exercise IV. Devote one lesson to oral recitation on text. Practice work suggested on page 10 and fill page 11 according to directions. It will interest the class to compare work by mounting sketches and giving "honorable mention" to the best.

Study page 12, Exercise V. Make simple drawing necessary to show that the pupils fully understood the text. When work is satisfactory, mount on page 13. Interesting results can be obtained by using construction paper and working out the sketch in tones of the same color.

NOVEMBER.

Study page 14, Exercise VI. After sufficient practice, carry out instructions given for page 15.

Study page 16, exercise VII. Practice alphabet and single letters. Each pupil should practice lettering his own name artistically, in accordance with the instructions given during the last lessons. See that pupils thoroughly understand spacing. Fill page 17.

Study page 18. Read text carefully. There may not be time to do more than the practice work this month.

DECEMBER.

Continue last month's work and fill page 19 according to directions.

Study page 20. Teacher demonstrates upon the board, so that all may see the receding lines reach the V. P. The rest of this month may be devoted to the making of calendars, or any other work desired by the teacher for Christmas gifts. If pupils make calendars they should letter them neatly.

JANUARY.

Review page 20 and fill page 21.

Study page 22. Several lessons will be needed to explain the text and to make sketches illustrating the rules of perspective as given on this page. Pupils draw from objects and fill page 23.

Study page 24, and fill page 25. Give a written test on the ten rules of perspective and demonstrate each rule by sketches.

FEBRUARY.

Pose work according to page 26. Make several sketches from the same model. Keep the drawings simple. When work is satisfactory, mount on page 27.

Study page 28 and work on page 29 as suggested.

MARCH.

Study page 30, making working drawings as suggested. See that pupils thoroughly understand terms for this new work. Fill page 31 according to directions.

Study page 32 and carry out work according to directions, placing result on page 33. Spend the rest of the month on nature work.

APRIL.

Study page 34 and place work on page 35.

Make portfolios according to page 38. The work on this page is of great value.

MAY.

Study Exercise XX, page 36. Use violets, nasturtiums, or peach blossoms as a motive. Mount on page 37.

Study Exercise XXI, page 36. Apply the stencil design to a scarf or curtain. If the object is to be laundered, use oil paints and turpentine. Mount a duplicate of this design on lower part of page 37.

An occasional lesson from flowers, vegetables or landscape in color will prove a pleasant change for the pupils after many lessons along industrial lines. See that all books are finished before the close of school.

ART EDUCATION FOR HIGH SCHOOLS.

Second Year in High School.

(Ninth Grade.)

SEPTEMBER.

Pictorial Representation: Plants and Flowers.—Chapter I, pages 1 to 10, down to paragraph "Color Quality." Students should prepare for recitation by study of certain paragraphs assigned; they should recite from paragraph headings, and discuss in class the illustrations in the book, together with such additional illustrations as it is possible to obtain. They should draw from large growths of grasses, sedges, weeds, flowers or fruits in outline, in neutral washes or in color, as the study suggests. For such work, use large size paper, in light, grayish tints. When sketches are finished, students should use a finder (see pages 18 and 19) to select interesting compositions, and should trim and mount the selection upon a mat of tinted paper of harmonious tone. The mount, as a general rule, should be grayer in its color quality than the dominating color of the sketch. (See color plate facing page 12.)

OCTOBER.

Pictorial Representation: Landscape Composition.—Chapter 1, pages 10 to 26, down to paragraph "Figures in the Landscape." Study text and discuss in class. As a further exemplification of the points developed, students may select from a photograph or from a blackboard sketch an interesting composition; then with neutral washes, or with charcoal, they make different value arrangements, using the same composition in a variety of ways. (See Fig. 32, page 23.) This illustration may form the basis of an exercise of this kind; make a tracing of the shapes and fill them in with a value arrangement, not like that in the picture. For example, the sky might be dark, as at night, or as in a storm; the ground might be lighter, as in winter; trees in the foreground might be lighter or darker than the value of those in the picture; water in the foreground might be of the same value as sky, etc. Landscapes in simple values like these are effective when done on tinted paper with flat washes of neutral gray, or on tinted paper in monotones; as, in sepia tones

on buff paper; in blue tones on warm gray paper; in green tones on bogus paper, etc. Such studies when trimmed and mounted may be used as decorations for magazine covers, calendars, portfolios, etc.

NOVEMBER.

Pictorial Representation: Still-Life Composition—"Still-life Drawing," page 26. Study and discuss the text and illustrations on pages 19, 20 and 21, down to paragraph "Landscape Drawing." Practice pencil sketching from carefully placed objects of contrasting values, similar to those objects represented in Figs. 4, 5, 8, 9, 14, 18 and 19. Draw, also, in charcoal outline from simple groups of two objects, using colored chalk as an added element of interest, as illustrated in color plate facing page 33. (See "The Use of Colored Chalks or Crayons," page 33.)

DECEMBER.

Constructive Design.—The work of this month should be the making of some article planned in the drawing period. (See paragraph, "The Development of a Note-book Cover," pages 264 and 265.) The constructive process therein described may be applied to the making of covers of different shapes, sizes and proportions, to fit any need. The student should use as a decorative feature some exercise of the past three months. For example, a portfolio or book-cover may be decorated with one of the tonal landscapes done in October; or an album may be decorated with a flower panel; or a calendar mount may be decorated with a landscape or flower motive; or the cover of a blank recipe book may be decorated with an arrangement of still-life forms in color values.

JANUARY.

Perspective.—Chapter II, page 34. Definite paragraphs should be assigned for study, followed by a full discussion in class of all the principles presented. The text-book will be found invaluable in mastering perspective, as this is a science that is demonstrated and proved in the text, where the rules are concisely and definitely stated. Give Exercises I to IV, page 36, and Exercises VI and VII, page 44. Students should memorize the rules given and be able to demonstrate by quick

sketches the principles involved. Cover the ground to "Angular Perspective," page 45.

FEBRUARY.

Constructive Drawing.—Chapter IV, page 103. Study and discuss in class the text from beginning of chapter to "Geometric Problems," page 110. Students should be familiar with the various instruments and by their use should practice drawing various lines, curves, etc., before taking up problems. When this ground has been covered, the teacher should select twelve of the elementary geometric problems ("Geometric Problems," page 110) and should see that these are very carefully arranged and accurately drawn, as directed in the text. The work should be done in pencil first and then inked in. This will necessitate the making of three plates, which should be properly lettered, etc. Students should familiarize themselves with the geometric definitions given on pages 122 to 128. If much of the work of this month has already been given in the grades below the high school, the class may proceed to the study of "Working Drawings," pages 129 to 135, and work out the exercises suggested on these pages.

MARCH.

Design (see "Introductory Note" page 1).—Chapter VI, page 222. Study text from beginning of chapter to Exercise I, page 224. These paragraphs should be thoroughly discussed in class, as they present most interesting and important principles. When this has been done, student will be ready for Exercise I, page 224. The working out of this exercise should be followed by a class criticism of all work done. (By "class criticism" is meant the posting upon a screen of the work of each student, and the discussion and criticism before the class of the results of an exercise. This gives each student the benefit of the experience of all other students.)

Pupils should be encouraged to look for examples of straight line rhythm in rugs, baskets, textiles, prints, etc., and to bring to class as many of these examples as possible. In the class the merits of these examples should be discussed, and the best designs reproduced by the students, or used as the basis for

modifications. Exercises II and III may then be worked out in class, with similar supplementary suggestions and enrichment. The bringing in of material or motives by both teacher and pupil gives local interest and vitalizes the work.

APRIL.

Design: The Principle of Rhythm.—Study pages 225, 226 and 227 to Exercise IV. In discussing this form of rhythm a variety of materials may be brought into class. Plants, flowers and growths of almost any kind illustrate rhythm, and beautiful examples of this principle may be found in many Japanese prints, in landscape compositions, etc. After thorough discussion of this new form of rhythm, students should work out Exercise IV in class. The working out of this problem may take several lessons. Follow with Exercise V. Do not fail to give students the benefit of class criticism of results.

Design: The Principle of Balance.—Study pages 235 to 239, down to paragraph "Further Application of Balance." Discuss this subject matter in class, paragraph by paragraph, as in the study of Rhythm. Select from the exercises given on pages 238 and 239 those problems that it will be possible to work out in class.

MAY.

Design: The Principle of Harmony.—Study pages 242 to 249, to "Harmony in Values and Colors." Discuss fully in class. Bring in common examples of harmony and also examples of a violation of harmony, and show how these violations might be corrected.

As a finishing touch to the year's work, try to arrange a lesson in the practical application of the principles studied. Refer to pages 261, 262 and 263 for suggestions on "The Development of a Stencil." Or, make a desk-pad, a portfolio, or a note-book. (See page 264, "The Development of a Note-book Cover.") The teacher may select an exercise from these suggestions, and plan lessons to suit the time and the local conditions.

Third Year in the High School.

(Tenth Grade.)

SEPTEMBER.

Pictorial Representation: Details of the Landscape in Pencil Rendering.—Review "Landscape Drawing," pages 21 and 22, and study "Details of the Landscape" and "Accents," pages 23 and 26. Students may copy for pencil technique the sketch of the tree shown in Fig. 3, page 3. They may select with a finder a composition from the color plate facing page 34, and translate it into a pencil sketch. In a similar way, translate Fig. 13, page 39. The landscape details shown on page 25 may also be copied and enlarged. After this preliminary work, students should attempt other things of this kind—objects seen from the schoolroom windows, or about home, such as towers, roofs, chimneys, rocks, gateways, dormer windows, etc. Paper of light tint, such as gray or buff, may be used for this work with artistic effect.

OCTOBER.

Perspective.—Study in review pages 33 to 45. Give exercises to test the students' understanding of these principles. Study paragraphs "Angular Perspective," page 45, "Objects at 45 Degrees," page 47, and "Study of the Open Door," pages 48 to 50. The text given offers a fine opportunity for the student to familiarize himself with the principles of perspective, with the added advantage to him of personal effort and investigation. He does not depend solely on the teacher for what he learns. Work out exercises suggested in the paragraphs above referred to. Fig. 28, page 49, suggests some of the objects that may be drawn in angular perspective. Make artistic pencil sketches of a corner of a room, a building, a portion of a roof seen from a window, a staircase, etc. Such objects may be drawn in outline only, as perspective tests, or they may be finished in values. Too often the subject of perspective is dry and uninteresting because it is treated with an entire absence of art feeling.

NOVEMBER.

Constructive Drawing.—Geometric Problems. Review "Geometric Definitions," pages 122 to 128. Give twelve or more

problems in addition to those given in the first year, selected from the problems on pages 111 to 122. These problems should be drawn accurately on well-arranged plates, and should be carefully inked in and lettered, with due attention to all conventions and to quality of line. Review "Working Drawings," pages 129, 130 131 and 132; "Dimensioning," page 132; "Drawing to Scale," pages 133 and 134.

DECEMBER.

Architectural Drawing.—Chapter V, page 179. Study and discuss in class "The Need of Buildings" and "Conditions of Construction," page 179; "Conventions," page 180. Study Problem I—"A Miniature House," pages 180 to 186. This problem should be worked out in a plate. (See page 183.) If the teacher thinks best, the dimensions may be slightly changed, so that the exercise becomes something more than a copy of the plate given in the book.

JANUARY AND FEBRUARY.

Architectural Drawing: A One-Story Cottage.—Problem II, pages 186 to 198. The text on these pages should be fully discussed in class, the discussion on "Essential Features," preceding any drawing. Each student should submit a rough sketch of the ground-plan of the house he intends to design, following the suggestions of the text on page 190. After these sketches have been made the basis of class criticism, the students should proceed to work out with instruments a set of plans and elevations similar to those in Figs. 11, 12 and 13, pages 187, 188 and 189. A knowledge and understanding of the text on "The Kitchen," page 193; "The Living Room," "The Bed Room" and "The Bath Room," pages 194 and 195; "Ceilings," "Windows and Doors," "The Chimney," "The Piazza," etc., pages 195 to 198, is essential to the successful working out of these plans.

MARCH.

Design.—Review pages 222 to 228, giving exercises in review at discretion of teacher. Study and discuss in class "Structural Rhythm," pages 228 and 229. Find practical ex-

amples in schoolroom. Work out Exercises VI, VII and VIII, pages 229 and 230. Then study "Rhythm in Constructive Design," pages 230, 231 and 232, to "Rhythm of Values." Work out Exercises IX and X, pages 231 and 232.

APRIL.

Design: The Principles of Balance.—Review from paragraph "The Principles of Balance," page 235, to paragraph "Further Application of Balance," page 239. Work out such problems as seem advisable, selecting from those suggested in the text. Bring in examples of balance as exemplified in fabrics, still-life forms, photographs and illustrations, etc. Try to lead students to an appreciation of the meaning of balance in the objects everywhere surrounding them.

Design: The Principle of Harmony.—Review pages 242 to 249. Discuss again these points in class. Study "Harmony in Values and Colors," page 249, to "Color Intensity in Chroma," page 252. Work out Exercise XXIV, page 252, in several different colors.

MAY.

Applied Design.—Read "Note," page 261. Select for class work one or more of the exercises given in the problem stated on pages 261 to 276. Be sure that each student makes, as a climax to the year's work, some article that is artistically worthy and is of practical use.

Fourth Year in the High School.

(Eleventh Grade.)

SEPTEMBER.

Pictorial Representation: Still-Life Studies in Pencil.—Review paragraph "Still-Life Drawing," pages 26 and 27. Study paragraph "Pencil Studies," pages 29 and 31. Arrange still-life studies, such as the following: a spray of golden-rod in a tall vase, the vase showing contrasting values; a twig bearing rose-hips, gathered before the leaves have fallen, placed in a vase whose value contrasts with the value of the growth; a growth of flowering bean, bearing flowers, seed-pods and leaves, placed in a suitable vase; a growth of teazle or thistle in a

"light and dark" jar, etc. Or, simple groups of still-life forms alone, of contrasting values, may be drawn. It must be remembered that the beauty of pencil rendering depends largely on what may be called its brilliancy and "snap" rather than upon the subtle differences between values which can best be expressed in color. In pencil rendering the most effective results can be obtained by using a hard finished paper of light tint, such as buff or warm gray. Give class criticisms frequently.

OCTOBER.

Pictorial Representation: Still-Life Studies in Charcoal.—Study paragraph "Still-Life Studies with Charcoal," pages 27, 28 and 29. Figs. 37 and 38, page 29, and Fig. 39, page 30, show three steps in the process of a charcoal drawing of a group of objects. Other arrangements are shown in Fig. 10, page 7, and in Fig. 40, page 32. Students should make similar arrangements, placing the groups against a suitable background, as shown in the illustrations. In drawing these arrangements, follow the instructions given in the text. Another class of material that lends itself well to this tonal work in charcoal is an arrangement of flowers in still-life forms. Large growths, such as chrysanthemums or dahlias, are better adapted to this treatment than smaller flowers.

Figure and Animal Drawing.—Chapter III, page 71. Study and discuss in class "Knowledge of Anatomy," "General Proportions," "Proportionate Widths," "Proportionate Depths," "Proportions Vary with Age," pages 71 to 76. Students are to work out Exercise I, page 76, at home, and bring results to class for criticism. They are to work out Exercise II, pages 76 and 78, in class. The pencil may be used for this work, as shown in Figs. 8 and 9, page 77, or the sketching may be done in charcoal. Practice as many such exercises as time permits.

DECEMBER.

Figure and Animal Drawing.—Study "Proportions of the Head and Features," page 78. Work out Exercises III and IV, page 79. Study "Action," page 79. The students should proceed in their own work after the manner suggested in Exercise V, page 79, and as exemplified in Figs. 15 and 16, pages

82 and 83. If there is time, study "Balance," pages 79, 84 and 85. Work out Exercises VI and VII, pages 85 and 86.

JANUARY.

Perspective.—Review points indicated in paragraph headings of this chapter, up to "Turned Cylindric and Conical Objects," page 50. Study and discuss in class "Turned Cylindric and Conical Objects," page 50, and work out Exercises VIII, IX and X, page 52. Study and demonstrate, in class, "Oblique Perspective," pages 52 to 56, inclusive. Here, again, the fact that the student will be able by a study of the text to prepare a large part of this work before coming to class will materially lessen the work of the teacher, and, in addition to this, there will result a clearer understanding of the principles on the part of the student. In working out exercises similar to those shown in Figs. 36, 37, 38 and 39, pages 53, 54 and 55, the student should draw upon paper of a size sufficiently large to provide for the placing of a horizon line and vanishing points on the sheet.

FEBRUARY.

Design.—Review pages 222 to 232. Study "Rhythm of Values," pages 232 to 234. Work out Exercises XI and XII. As an additional problem, let the students make a decorative landscape composition in outline, using tinted paper, and filling in the shape with four tones of neutral values, taken from the value scale made in Exercise XI.

Design.—Review "Harmony in Value and Colors," page 249, and "Color Properties," page 252. Study "Color Intensity or Chroma," pages 252, 253 and 254, to "Color Schemes." Work out Exercises XXV and XXVI.

MARCH.

Design: Color Schemes.—Study "Color Schemes" and "Monochromatic Color Schemes," page 254. Work out Exercises XXVII and XXVIII, page 255.

Design: Complementary Color Schemes.—Study "Complementary Color Schemes," pages 255 and 256. Work out exercises XXIX, XXX, XXXI, XXXII and XXXIII, pages 256 and 257. Make a practical application of the use of these color

schemes. Suggestions for working out some construction in which these color schemes may be applied will be found in the problems given in Exercises XLIII to LI, pages 261 to 275.

APRIL.

Historic Ornament.—Chapter VII, page 277. This subject is felt to be important as an element of general education, and the matter therein contained should form the basis of note-book compilations, illustrated by Perry prints, blue prints or sketches. The lessons can be recited in class, and the note-books made and arranged there, if time permits. If such work does not meet the requirements of the school, further work in Constructive or Architectural Drawing may be given, or a brief course in Mechanical Perspective. (See Chapters IV and V, and page 59 in Chapter II.)

MAY.

Art History.—The same option is suggested for Chapter VIII, page 303. This is felt to be one of the most important chapters of the book, so far as the cultural element is concerned, and may be presented by the method suggested for "Historic Ornament" in April.

Commercial Subjects.

COMMERCIAL CURRICULUM.

First Plan.

Commercial arithmetic is given the second term of the first year. Bookkeeping is given throughout the second year, five times a week, double periods. Typewriting is taught throughout the third year five times a week, double periods, but stenography may come in for part of this time if desired. The work for the fourth year is given in the suggested outline in this pamphlet Practice in stenography and typewriting will be continued.

Second Plan.

Typewriting is given in the place of commercial arithmetic, the second term of the first year. This is continued in the first term of the second year, and bookkeeping is taken up in the second term of the second year. Bookkeeping is continued in the third year, with practice in typewriting. Stenography is taken up here if desired. In the fourth year, commercial arithmetic is taken up in the first term, and the second term is devoted to economics, commercial geography or commercial law. Stenography and typewriting practice is continued.

COMMERCIAL ARITHMETIC.

FIRST YEAR. SECOND TERM.

The operations and principles of arithmetic are supposed to have been learned before the pupil reaches this term. If any pupil has to ask how to work problems in the grammar school arithmetic he has no place in this class. He should be put back at once into the class where the principles of arithmetic are taught. Commercial arithmetic is a drill in the processes and principles of arithmetic in order to make the pupil rapid and accurate in their application.

The first of these processes, and the most important, is the fundamental operation of addition. Your pupils can possibly add a column in figures six broad and ten deep in two or three minutes. You must drill the class until this number can be

added in about thirty-five seconds. In like manner give drills in the other fundamental operations.

As to drill in problems, take the text-book, Nicholson's Grammar School Arithmetic, and have the problems solved in rapid time, drilling for rapidity and accuracy. Suppose the first lesson assigned has been from page 7 to the bottom of page 13. Explain to the class that you presume them to know the explanations on these pages, but you want them to work all the problems and exercises accurately and as rapidly as possible. When the time comes for the recitation, it will proceed as follows:

Take a pencil and paper (this means slates where slates are used, or may be the blackboard, at the option of the teacher,) and write. Teacher will dictate the numbers on page 9. Having dictated a small list, pause to have them added. Have the results read correctly. Add in the same manner all the numbers in the pages assigned. Read the numbers rapidly. Some slow pupil will say it is too fast. Keep up the speed. The pupil is too slow. Let the voice be quick and smart. Let the pencils move rapidly. Let the spirit be, "Get it right and get it quickly." And so go on through the book. "Do" every exercise. Do it perfectly. Do it rapidly.

In this work the teacher will have to test the daily preparation of the pupil with much care. Since the pupil has recently gone over the work and can solve the problems, there may be a disposition to enter the recitation without having made preparation for that day's work. That the pupil has made special preparation for the day's work will show in the readiness with which he works the exercises. Let there be no mistake about what is here meant. It is intended that the pupil solve the problems at home and then come to class and work them again before the teacher. Readiness and accuracy are the result of drilling on the doing of definite things. And if the teacher's study of his class reveals that his class is slow on any particular set of problems he should go over that set again and again until the operations are thoroughly mastered.

The book is practical and the boy who has drilled in it as here indicated will be a valuable clerk in any office. His work

in bookkeeping will become a pleasure. He will get the inspiration that comes from mastering a subject. This is the only real inspiration that a pupil gets.

High School Arithmetic, Fourth year, II. 5. Use Nicholson's Advanced Arithmetic, using the parts that will best meet the needs of the students.

BOOKKEEPING.

Second or Third Year, I. and II. 5.

Text: Williams and Roger's Modern Illustrative Bookkeeping.

Commercial arithmetic was taught in the first year, but it is important that drills in the fundamental operations and in the classes of problems most frequently occurring in bookkeeping be continued. Accuracy and rapidity in addition, in making out bills, in working discounts, etc., are invaluable. No real bookkeeping is possible without them.

In teaching this subject, follow the text exactly as it is written. After the text has been mastered, if time permits, lectures, comments and related matters may be taken up. The first things for a teacher of a new text-book to do is to study faithfully the text and the point-of-view of the author. Until these have been mastered, he is incapable of making valuable comment or criticism.

Reviews.—At the end of sections, as on pages 20, 39, etc., lists of questions are placed for review purposes. The teacher must make these reviews frequent and thoroughly alive. The questions put in a mechanical way and similarly answered will not serve the purpose for which they were intended. They are meant to be suggestive questions, reviewing and drilling the pupil on what he has passed over. Review and drill until every point is mastered. Review and drill for accuracy, for rapidity, for neatness. Review and drill work call for genuine teaching power. The novelty of the first presentation is gone. To make it stick, to make it vital, these are the climaxes of the teaching.

Neatness and Order.—Insist upon these. Insist upon neat figures. Put units under units, tens under tens, etc. Errors will be made. They are steps in learning. Teach only the best.

way to correct errors. When a pupil discovers an error in his work, his impatience and disappointment are likely to cause a hurried scratching and erasing, a hasty stroke of the pen through the error, the removal of the page containing the error, etc. Avoid these by early and plain teaching on how to correct errors.

Do not take up a new exercise until the old one is mastered by each student. This work does not demand that the pupils all remain at the same place in the text. They may go according to their ability. Master each exercise before taking up the new one.

PHONOGRAPHY.

THIRD YEAR. 5 PERIODS A WEEK

Text: Selected by the School.

The teacher should study the text very carefully, so as to present the subject exactly as the pupils have to study it from the book. Get the author's point-of-view.

Study the directions of the book carefully. *Hold the pupils responsible for studying and following them.* You can not hold your pupils responsible for learning the lessons of their books unless you know these lessons perfectly and have clearly before your mind the important points of each lesson. At the end of the course the student should be able to take dictation rapidly and accurately.

TYPEWRITING.

SECOND OR THIRD YEAR.

Complete a good instructor. Do not "pass" the student until he has developed skill and accuracy.

ECONOMICS.

FOURTH YEAR. FIRST OR SECOND HALF. 5 PERIODS A WEEK.

Text: Bullock's The Elements of Economics.

The elements of economics are so intimately connected with the business affairs of all communities that the teacher has an exceptional opportunity in this study to teach the pupils to reflect upon the phenomena about them and to draw conclusions from them. And not only will the pupil draw upon the facts of

his environment, but he will draw upon the knowledge that he has learned in other subjects in the course of his study. Here, then, is the most important point for the teacher to observe in this subject. If a knowledge of geography or history lies at the basis of the subject under discussion, be sure that this fundamental knowledge is accurately known before trying to build an economic superstructure upon it. How many pupils and older persons do you find every year deducing important propositions from the history of "Greece and Rome"? Speakers and writers have inferred every imaginable principle and rule from "Greece and Rome," because they are usually very poorly and inaccurately informed about Greece and Rome. A scientific conclusion must be based upon a wide range of accurate observation. If you are studying about corporations, let the pupils become familiar with the corporations that touch them. What corporations affect your community? If the lesson is about consumption of wheat, approach it from the standpoint of wheat consumption in your community. So, as stated above, whether the knowledge be that of observation or reading, let it be accurately determined before an economic superstructure is to be placed upon it.

The subject of bookkeeping and accounting is studied in the light of its ability to grasp economic problems. Many of the problems of economics are looked at and studied through the bookkeeping terms of accounts, statements, loss, gain, banking, etc. To the practical work of accounting the subject of economics adds the reflections of the student and scholar, and the teacher should study to develop this aim.

Certain chapters will appeal to the class as more practical than others, as the "Production of Wealth," "Railroad Transportation," etc. Other chapters are farther removed from the experience of the class, as "Monopolies," "Projects for Economic Reform," etc. The chapters that are on the more familiar subjects should receive more time than those whose subject matter is remote from the class experience and whose theories are in advance of the class scholarship.

Inasmuch as commercial history is an important part of world history, which is studied in the high school, it is recommended

that the teacher of history have special regard for this branch and that the time allotted to economics and commercial history be divided between the two subjects.

Text: Coman's Industrial History of the United States.

COMMERCIAL GEOGRAPHY.

FOURTH YEAR. SECOND HALF. 5 PERIODS A WEEK.

Text: Adam's Elements of Commercial Geography.

The study of common school geography ceased with the first half of the eighth grade. Commercial geography is put down for the last half of the eleventh grade. Two and one-half years have elapsed and the pupils have forgotten most of the geography they had learned. Commercial geography is the geography of the things being done by mankind today, and is therefore a most important branch in the education of our youth.

The first important point to teach is that each pupil must have a clear mental picture of a commercial map of the world. This means that the pupil must be able to draw such a map as the one at the introduction of the text-book. To study how to draw this map, look at the parallels and meridians on it. See that the parallels gradually increase the length of the map degree as the poles are approached. Why? Draw first the meridians and parallels. Next locate on these meridians and parallels some few points about which you can draw the map of the world. For a first trial locate the following:

a. New Orleans and the mouth of the Mississippi River. See that they are about the intersection of 90 W. and 30 N. Draw a short portion of the coast line in this region.

b. Note the same for coast line of Africa with reference to O N and O E.

c. Same for Cairo, Egypt, 30 N. and 30 E.

d. Same for Durban, about 30 S. and 30 E.

Now, with these points located, draw the coast line of the continents from memory, being sure to make it pass through these points.

In like manner clear up from day to day a few more points in the location of the map until your class has a good map.

Geography is concerned with places. Their latitude, longitude, climate, altitude, relation to other geographical facts, etc., must be known before we can interpret their effect upon the commerce of the world. Maps must be known. Places, mountains, rivers, plains, cities, etc., must be known.

The next important point in the teaching of commercial geography is to study especially those commodities that are handled in our own communities. When the sisal hemp is studied, get a sample of it from your store; learn what use your community makes of it. When the manufacture of ceramics is studied in your class, have samples brought to school; find where your merchants get them; learn the grades in your market. And so continue until the class knows fairly well these important facts about all the articles of commerce in their homes and in their community stores.

The text is written for classes in the United States. It has the United States view-point. If the teacher will add the map drawing and localization indicated in the foregoing, and teach them fairly well, the course in geography will be at once pleasant, practical, and educative.

COMMERCIAL LAW.

FOURTH YEAR II. 5.

Complete the text. Huffcutt's Elements of Business Law.

PHYSICAL GEOGRAPHY.

Physical Geography. Any good text, any year, one term.

Agricultural Sciences.

AGRICULTURAL CURRICULUM.

The first change proposed in the new outline for this course is the correlation of Agriculture and Botany during the first year of the work in such a way as to avoid duplication of recitation material and of laboratory work. In the second year the special agriculture subject is "Farm Crops." This whole year may be given to Ancient History, and it is intended that algebra be taught throughout the year. In the third year the special agriculture subject is "Farm Animals." Plane geometry is required, but mediaeval and modern history may be omitted. Dairying and poultry will be taken up in the proper place under farm animals. In the fourth year ten hours a week are given to the study of soils and fertilizers, rural law and farm management, and secondary arithmetic and farm bookkeeping. No English work is prescribed for this year. The time provided for field and shop should be spent in the agricultural laboratory on rainy days or when there is no work to do in field and shop. Laboratory note-books will be required for agriculture as well as for physics or chemistry.

BOTANY.

For the use of the classes in botany in the Agricultural High Schools of the State of Louisiana the following experiments or observations have been selected as being under no circumstances to be omitted. The numbers refer to the paragraph in the adopted text-book, Andrews' Botany All the Year Round, describing the experiments or observations in question. They are: 14, 19, 22, 26, 27, 29, 43, 57, 63, 118, 119, 121, 122, 138, 139, 143, 144, 145, 148, 153, 154, 159, 169, 196, 203, 213, 219, 220, 221, 227 and 231.

These experiments cover the most important points in the physiology of the plants with which students should be familiar as well as some of the points of structure. Owing to the plan of the text-book the order in which the experiments are indicated is not, in many cases, the logical one, but if the work is carried on under the direction of a teacher trained in the subject, and

no others should attempt to teach botany, this apparent lack of order will be immaterial.

In 14 we learn of the fact that water is being given off by leaves constantly while in 19 we are shown how to measure the amount thus evaporated. The path this water takes in the leaf and in the stem is shown respectively in 43 and 221. The amount of water required by growing crops, necessity for cultivation to reduce loss of water from the soil as by weeds, etc., should be impressed upon the pupils. How this water enters the root and may pass from one living cell to another is shown in 227.

That green plants manufacture the bulk of their own food, giving out oxygen and absorbing carbon dioxide at the same time is shown by 22 and 26, while in 27 we learn the necessity of light for this process. In 196 we estimate the proportional parts of seeds and plants that came from the soil (water and ash) and that were manufactured by the plant itself (organic combustible matter). The harmful effect of shade on some plants can be explained. The path this manufactured food takes in going to the roots is shown by 231. The effects of girdling ought to be discussed.

When plants begin to use up their manufactued food in growth or for other purposes they respire—that is, take in oxygen and give out carbon dioxide, just as all animals do. This is shown in 29. Let the teacher here point out the immense need of this phenomenon in the making of bread with the aid of yeast plants.

A manifestation of life is the ability to respond to external stimuli. This response as regards light is shown in 57 and 63. Explain the effect upon a tree of growth in a dense forest, with one side shaded and the other in the open. Why are house plants usually one-sided? The response to the stimuli of moisture is studied in 169 and of gravity in 159. Consider the effect of these two phenomena upon root growth. How uneven growth of the stem is advantageous to it is seen in the experiment in 203 with twining stems.

As being of practical value to the farmer the paragraphs on the structure and germination of some of the more familiar seeds have been chosen, 118, 119, 121, 122, 145, 148, 153 and 154.

Of perhaps still greater value are those experiments, 138, 139 and 144, which show the conditions favorable or unfavorable to germination. Why does a wet spring injure cotton, and other questions can be answered now. Perhaps the most important experiment in the whole course is 144, showing the advantage of using good seed. If this can be firmly impressed upon the pupils and everything else forgotten, the work will still not have been in vain.

In 213, 219, 220 and 221 we learn the essential points of difference between the two groups of monocotyledons and dicotyledons.

It is not expected that the work shall be limited to these experiments or observations above. Indeed it is highly desirable that, as far as time permits, the whole book, save perhaps chapters 9 and 10 if time is limited, be gone through carefully. However, under no circumstances should the paragraphs above be omitted.

A teacher well versed in the subject should devise experiments or observations showing the different mineral foods required by plants (crops). Especially should he lay stress upon the nitrogen-gathering faculty of leguminous crops and the bearing this has on the rotation of crops.

This course to be of any help to the farm boys and girls must be made very practical. Experiments and observations on the following subjects will tend to make botany of its greatest benefit to the farmer. The testing of seeds for germination and purity; the different methods of propagation, seeds, buds, graftings, layerings, and cuttings; pruning; seed selection; inoculation of legumes; a study of the legumes; weeds with methods of eradication; common diseases of plants; spraying and the making of the different sprays; and crop rotation. The work in crop rotation can best be done in conjunction with the plot work in the school garden and with the work of chemistry and botany together.

Reference Books:

1. Hunt's The Cereals in America (Orange Judd Co., New York).

2. Hunt's The Forage and Fiber Crops in America (Orange Judd Co., New York).

3. Voorhees' Forage Crops (Macmillan Co., New York).

4. Bailey's The Nursery Book (Macmillan Co., New York).

5. Bailey's Principles of Fruit Growing (Macmillan Co., New York).

6. Bailey's Principles of Vegetable Growing (Macmillan Co., New York).

7. Bailey's The Pruning Book (Macmillan Co., New York).

8. Bailey's Garden Making (Macmillan Co., New York).

9. Bailey's Horticulturist's Rule Book (Macmillan Co., New York).

10. Jackson and Dougherty's Agriculture Through the Laboratory and School Garden.

11. Coburn's The Book of Alfalfa (Orange Judd Co., New York).

12. Bulletins Nos. 96, 87, 100, 132 (Illinois Experiment Station, Urbana, Ill.).

13. Bulletin No. 2, Oklahoma Agricultural and Mechanical College, Teachers' Series (Oklahoma A. and M. College, Stillwater, Okla.).

14. Farmers' Bulletins Nos. 348, 324, 318, 314, 306, 302, 279, 253. 240, 229, 339 (U. S. Dept. of Agr., Washington, D. C.).

15. Conn's Practical Dairy Bacteriology (Orange Judd Co., New York).

16. Lipman's Bacteria in Relation to Country Life (Macmillan Co., New York).

17. Bulletin No. 129, Pennsylvania State Dept. of Agr., Harrisburg, Pa.

18. Bulletin No. 142, Alabama Agr. Expt. Sta., Auburn, Ala.

19. Bulletin No. 77, Iowa Agr. Expt. Sta., Ames, Ia.

20. Studies of Corn and Its Uses (Agricultural College Extension, Agricultural College, Urbana, Ill.).

AGRICULTURAL ZOOLOGY.

This syllabus is designed to follow Herrick's Text-Book and Exercises on Zoology; and to deal with only the salient points of Zoology as applied to the agricultural student, especially of Louisiana.

Protozoa.—Many forms of protozoa can be readily obtained and most are easily studied. The following method may be used

to obtain them: Boil in water for about a half hour some dry grass, so as to get a liquid of a dirty brown color. Pour off the water and let it stand in open dishes for a week or more. In warm weather, amœba will appear in the sediment at the bottom at the end of a week; in cold weather allow two or three weeks. In the same jar with the amœba will appear at a later time some paramœcium. These are too active for study unless narcotized or confined. Collect some of the fine scum found on stagnant ponds; this is usually euglena, and can be readily observed. Its red eye-spot is sensitive to the light, and its movements are always toward the light.

Attention should be given to the life cycle of the malarial germ. Examination of the blood of a malarial patient will often show the germ within a blood corpuscle, especially just before a chill. More complete study of the germ may be taken up later in connection with the mosquito.

Porifera.—If sponges can be gotten, they may be studied to advantage. The grantia is the simplest, and its structure can be readily gotten by means of cross and longitudinal sections. One may be boiled for several minutes in potash or lye and the carbonate of lime spicules observed.

Coelentera.—The fresh water hydra can usually be obtained from ponds. It is simple, easily studied and a good example of the type. If salt or brackish water is near by, examine piling, old oyster shell and the bottom of boats for a hydroid which grows in colonies, and is popularly known as "frog-hair," "sea-hair" or "boat-moss." This is generally one or other of the two species of bougainvilla found on our coast. The hydroids are of little commercial value outside of the corals, but in them we find the first true division of labor among the cells.

Echinodermata.—Specimens of this branch can generally be gotten if salt or brackish water is near at hand, as they are in all marine forms. If preserved specimens are not available, dried ones will afford opportunity for considerable study. Animals of this order are of no economic importance on our coast, but along the Atlantic the asterias vulgaris is extremely destructive to the oysters.

The Worms.—Under this division is included the several branches of worms. Many of the flat and round worms are par-

asitic on man and the domestic animals. Horses, sheep, hogs, and cattle contain hosts of one or other of them, and from these animals they enter the body of man. Although of much economic importance, they are not easily obtained, and are not convenient for study in the class-room. Much attention, however, should be given to the discussion of these forms; their life-histories; economic importance to the farmer; and the methods of treating.

The Segmented Worms.—Some of these forms can always be obtained. Inland, the common earth-worm is a good form and is always at hand; near the coast, the clam-worm, Neries, can usually be gotten; the smaller species will be found among the oyster shells, while a larger species can be gotten by digging in the mud. The notes on the earthworm can be followed in the study of Neries, as the two are similar in structure. Among these forms we find for the first time segmentation which is so universal among the higher forms.

Mollusca.—Inland, the river mussel or fresh-water clam can usually be gotten; while near the coast, the oyster is always available. The former is better for study, but either will do, following the same note for both forms. For comparison, any of the fresh or salt water clams, conchs, penny-winkles, snails or slugs may be used.

Emphasis ought to be laid on the direct economic importance of the clams and oysters, and on the indirect value of the slugs and snails to the farmer, and of the conchs and penny-winkles to the oysterman.

Crustacea.—Form of this branch are always obtainable, and the crawfish, shrimp or crab may be used for study. A special study should be made of the grasshopper, or locust, followed by a study of other insects and spiders. In the cities, the "electric-light beetle" can usually be gotten in the spring. Special emphasis should be laid on this branch, as the order is of great economic interest, both directly and indirectly. The larger ones are used as food; while, among the smaller, are found the worst pests that the farmer has to contend with. A thorough study should be made of the more common insects, and distinction made between the harmful and beneficial. Attention should be given to the methods of preventing insects' ravages; ro-

tation of crops; destruction of the pests; the preparation and use of insecticides; methods of spraying; the mosquito, its life-history, habits, and methods of destroying, its danger as a disease carrier.

Chordata.—Animals of this branch should be studied in detail with regard to their life-histories, habits, and structure. Following the laboratory manual, use such specimens for structural study of each order as can be gotten, leading from the lower up to the higher. In the study of vertebrates, emphasis should be laid on their economic value, both direct and indirect, and their interrelation to all of the foregoing types, with the intention of giving an introduction to the student for such practical courses as Breeds and Breeding.

The idea of the entire course is to make the student familiar with the forms of life as found in the world around him; and that he may the more intelligently understand the whys and wherefores of farming on the modern scientific basis.

(See regular syllabus in Zoology.)

Reference Books for Zoology:

Wilcox's Farm Animals, (Doubleday, Page & Co., New York).

Jordan's Feeding of Animals (Macmillan Co., New York).

Smith's Profitable Stock Breeding. (H. R. Smith, Lincoln, Neb.).

Mumford's Beef Production (Prof. H. W. Mumford, Urbana, Ill.).

McIntosh's Diseases of Swine (Orange Judd Co., New York).

Watson's Farm Poultry (Macmillan Co., New York).

Plumb's Types and Breeds of Farm Animals (Ginn & Co, Atlanta, Ga.).

Henry's Feeds and Feedings (Prof. Henry, Madison, Wis.).

Bulletin No. 115, Louisiana Agricultural Experiment Station, Baton Rouge.

Davenport's Principles of Breeding (Ginn & Co., Atlanta, Ga.).

Craig's Judging Live Stock (Prof. J. A. Craig, Stillwater, Okla.).

Publications of State Crop Pest Commission, Baton Rouge.

Bulletin of Illinois Agricultural Experiment Station, Urbana, Ill., on Insects Injurious to Farm Crops.

Publications of the Bureau of Entomology, Department of Agriculture, Washington, D. C.

PHYSICS.

Text: Gorton's Physics.

The study of physics is very closely allied to the farm, and, in order to understand his work thoroughly the farmer must possess a knowledge of the underlying principles of this subject. The pupils in the agricultural high schools will have an opportunity of studying such experiments as will best give them the practical knowledge.

The plotting of curves, calibrating a yard and a meter, and making a study of the force of gravity will be the first experiments to perform. The use of curves in making tables is being used in many of the agriculturual bulletins, and the metric system is also used to some extent (entirely in the scientific world) in the popular bulletins, so it is necessary for the farmer boy to know something about them. The value of air pressure and its effect upon the lift and some force pumps together with the calibration of a barometer follow. The teacher ought to provide the school with the daily weather map (sent free, by the nearest district forecaster) in order to make a complete study of how our weather conditions are foretold and how we can tell the cause for changes in the direction of the wind. Further study will give us the cause of winds, rain, snow, hail, dew, and the difference in temperature of north and south winds. The siphon and the effect of pressure on the boiling point can both be studied in connection with air pressure.

The movements of soil water are caused by surface tension and capillarity. Let these two be studied separately to familiarize the student and then show by actual experiment their action. These may be done both in and out of doors. The cause and benefits of surface and under drainage can be studied at the same time, also how to make drains and the determining of their cost. Hydraulic pressure is used a great deal for lifting heavy loads and for great pressure, so the student must become

familiar with it. The process of osmosis can be shown the pupils at this time.

Heat is one of the necessaries of plant life and the study of it may be begun by having the boys and girls perform some experiments with latent heat and its effects upon the climate of any country near a large body of water, and the temperature of the soil early in the spring, when it will contain a large amount of water. The thermometers can next be given attention in regard to their construction and calibration. Both the Fahrenheit and the Centigrade ought to be studied. The quantity of heat necessary to change water to steam should be given attention in the laboratory as well as specific heat, conduction, convection, radiation, expansion, and contraction. The unit volume of weights of different substances can be studied in connection with specific gravity. Specific gravity is important to the dairyman.

The principles of farm machinery and draft will be found in a study of friction, parallelogram of forces, elasticity, levers, incline plane, and the pulley. Blacksmithing and carpentering give the practical uses of the general properties of matter, but chiefly porosity, elasticity, cohesion, adhesion, and fusion.

Reference Books:

1. King's Physics of Agriculture (published by the author, F. H. King, Madison, Wis.).

2. Davidson and Chase's Farm Machinery and Farm Motors (Orange Judd Co., New York).

3. Mosier's Soil Physics Laboratory Guide (College of Agriculture, Urbana, Ill.).

4. McCall's The Physical Properties of Soils (Orange Judd Co., New York).

5. Hall's The Soil (Orange Judd Co., New York).

6. Davis, Elementary Physical Geography (Ginn & Co., Atlanta, Ga.).

7. Tarr's New Physical Geography (Macmillan Co., New York).

8. Burkett's Soils (Orange Judd Co., New York).

9. Fletcher's Soils (Doubleday, Page & Co., New York).

10. Tarr's Elementary Geology (Macmillan Co., New York).

11. Scott's An Introduction to Geology (Macmillan Co., New York).

12. Elliott's Practical Farm Drainage: Why, When and How to Tile Drain (Wiley and Sons, New York).

13. Concrete Construction About the Home and on the Farm (The Atlas Portland Cement Co., New York).

14. The Process of Concreting (Universal Portland Cement Co., Chicago, Ill.).

15. Bulletins Nos. 93 and 100, Iowa Agricultural Experiment Station, Ames, Iowa.

16. Farmers' Bulletins Nos. 187 and 347, Department of Agriculture, Washington, D. C.

17. Bulletins Nos. 138 and 153, Wisconsin Agricultural Experiment Station, Madison, Wis.

18. Woll's Hand Book for Farmers and Dairymen (Wiley & Sons, New York).

19. King's Irrigation and Drainage (The Macmillan Co., New York).

Experiments in Physics:

1. The plotting of curves.
2. Calibration of a yard and a meter.
3. Force of gravity.
4. Effect of air pressure.
5. Lift and force pumps.
6. Construction, calibration and testing of a barometer.
7. Siphon.
8. Effect of pressure upon the boiling point.
9. Surface tension.
10. Capillarity.
11. Hydraulic pressure (Pascal's law).
12. Osmosis.
13. Latent heat.
14. Construction, calibration and testing of a Fahrenheit and a Centigrade thermometer.
15. Quantity of heat necessary to change water to steam.
16. Specific heat.
17. Ways of transferring heat.

18. Effects of heats (contraction and expansion).
19. Unit volume weights of different substances.
20. Specific gravity.
21. Friction.
22. Draft.
23. Parallelogram of forces.
24. Levers, three classes.
25. Pulleys.
26. Incline plane.
27. Properties of matter.
28. Comparison of wires in breaking strength.
29. Movements of soil water and all other agricultural experiments in the preliminary discussion.

CHEMISTRY.

Text: Hessler & Smith's Elements of Chemistry.

The successful farmer is one who gets both pleasure and remuneration out of his work, and he knows why he does his work, what chemical actions he can bring about in the soil, what fertilizers are best to apply, how to select seeds, how to feed his live-stock, and is really a thinking man. The sciences are so closely related that they can not be separated, and in making a study of one some points of the other will be learned. All of them must be taught to the boys who will be our farmers of tomorrow.

Chemistry is one of greatest importance. The following experiments have been selected for the pupils of agricultural high schools of Louisiana to perform in laboratories:

The composition of the atmosphere is first studied, because 97 per cent of all plant food comes from this source, and there are oxygen and hydrogen and the principal compounds formed by their union are brought to the pupil's attention. The relative amounts of oxygen and nitrogen existing in the air must be determined. A few common minerals—magnesium, sodium and potassium—ought to be burned in air, and iron in oxygen to learn more of the properties of the oxygen gas. When studying water the boiling point and freezing point can be included.

Nitrogen, being a very important part of the atmosphere, and on account of its value to the farmer, nitric acid, in con-

nection with the study of the different nitrates, needs careful consideration in the laboratory.

Hydrochloric acid can be studied with chlorine, bromine, and iodine, for those three elements comprise the Hologen group and possess several similar properties.

Sulphur, being one of the ingredients of the proteid compounds, should be given some attention in connection with the study of sulphuric acid and sulphurous acid. Carbon is another very prominent part of the proteids, and also of carbohydrates, and should be given considerable time. The manufacture of starch by the leaves of plants and the functions it performs in both plant and animal life should be made clear to the farm boy and girl. Wood, paper, kerosene and alcohol should be tested for carbon. Carbonates and carbon dioxide ought not be overlooked.

Plants require mineral plant food. Phosphorous and potassium are the most important, therefore needing a careful study both of themselves and their compounds. Calcium (lime) combines very readily with phosphorous and the principal phosphate fertilizing material is a calcium phosphate. Iron and its function in plant development should be carefully studied.

Solubility.—The above list of experiments shall be done in connection with plot work in the field, and there shall be the study of how they enter into plant life, soils and fertilizers from the most practical standpoint.

Further work in qualitative analysis is necessary to show the boys how they make the qualitative tests of fertilizing constituents in the soil, the solubility of the fertilizers to be used, and what elements they contain (not the exact percentage, because such information can always be obtained from the Agricultural Experiment Station, Baton Rouge, La., and it ought to be stamped on the fertilizer tag); a study of fertilizer tags, a study of the properties of poisons for destroying injurious insects and fungi.

A Babcock tester for determining the amount of fat in milk, cream, skim milk and buttermilk. The use of formalin in milk and the test for it should be known by the farm boy and girl, and, in fact, by everybody.

Experiments in Chemistry:

1. Composition of the atmosphere.
2. Study and preparation of hydrogen.
3. Study and preparation of oxygen.
4. Study and preparation of nitrogen, together with the comparative amounts of oxygen and nitrogen existing in the air.
5. Burning of magnesium, sodium and potassium in air, and iron in oxygen, with a study of compounds formed.
6. Study of boiling point, freezing point and action of acids on litmus.
7. Qualitative synthesis of water.
8. Distillation.
10. Study of nitrate compounds.
11. Study and preparation of hydrochloric acid.
12. Study of chlorine.
13. Study of bromine.
14. Study of iodine.
15. Study of sulphur.
16. Study and preparation of sulphuric acid.
17. Study and preparation of carbonic acid.
18. Study of starch.
19. Study of the carbonates.
20. Testing of carbon in wood, kerosene, paper and alcohol.
21. Study of phosphorous and its compounds with calcium.
22. Study of potassium.
23. Study of calcium.
24. Study of iron.
25. Solubility of the different elements and their compounds that are necessary for plant development.
26. Qualitative analysis. Enough of this work to show the pupils how to make qualitative tests of fertilizers, the solubility of fertilizers to determine the elements they contain, and to make a study of the different brands of feed stuffs.
27. A study of fertilizer tags.
28. A study of feed stuff tags.
29. Plot work to study needs of soils.
30. Babcock test for milk, cream, skim milk and buttermilk.

Reference Books:

1. Voorhees' Fertilizers (Macmillan Co., New York).
2. Roberts' The Fertility of the Land (Macmillan Co., New York).
3. Vivian's The First Principles of Soil Fertility (Orange Judd Co., New York).
4. Fletcher's Soils (Doubleday, Page & Co., New York).
5. Snyder's Chemistry of Plant and Animal Life (Macmillan Co., New York).
6. Snyder's Soils and Fertilizers (Macmillan Co., New York).

General Reference Books:

1. Bailey's Cyclopedia of American Agriculture, 4 volumes (Macmillan Co., New York).
2. Bailey's Cyclopedia of Horticulture, 4 volumes (Macmillan Co., New York).
3. Hatch and Haselwood's Elementary Agriculture, with Practical Arithmetic (R. K. Row & Co., Chicago, Ill.).
4. Earle's Southern Agriculture (Macmillan Co., New York).
5. Burkett's (et al.) Agriculture for Beginners, with Special Horticulture Supplement (Ginn & Co., Atlanta, Ga.).
6. Duggar's Elementary Southern Agriculture (Macmillan Co., New York).
7. Watson's Farm Poultry (Macmillan Co., New York).
8. Mead's Irrigation Institutions (Macmillan Co., New York).
9. Van Norman's First Lessons in Dairying (Orange Judd Co., New York).
10. Wing's Milk and Its Products (Macmillan Co., New York).
11. Taylor's Agricultural Economics (Macmillan Co., New York).

General Reference Books:

1. Bulletins of the Louisiana Agricultural Station, Baton Rouge, La. Names will be placed on permanent mailing list by request.

2. Bulletins of the different state experiment stations, which may be obtained by addressing the directors of the different stations.

3. Farmers' Bulletins, U. S. Department of Agriculture, Washington, D. C. May be obtained by addressing the Secretary of Agriculture.

4. Year Books of the Department of Agriculture. May be obtained from congressman or senator.

5. Monthly Publications, Division of Publications, U. S. Department of Agriculture, Washington, D. C.

6. List of Agricultural Publications from the state experiment stations received at the Office of Experiment Station monthly. (Office of Experiment Station, Washington, D. C.)

7. Soil Survey Reports, Bureau of Soils, U. S. Department of Agriculture, Washington, D. C.

8. Different Publications of the Office of Experiment Stations on Rural Education.

9. The Breeders' Gazette (Sanders Publishing Co., Chicago, Ill. A weekly stock journal).

10. Southern Farm Gazette (Southern Farm Gazette, Starkville, Miss. A weekly diversified crop paper).

11. The Country Review, Baton Rouge, La.

EQUIPMENT NECESSARY FOR THE AGRICULTURAL HIGH SCHOOLS, NOT INCLUDING LABORATORIES.

1. Good agricultural library.

2. Cases for loose pamphlets and bulletins (Library Bureau, New Orleans, La., and F. F. Hansell & Bro., New Orleans).

3. Good book-case.

4. Sample of tile for drainage purposes.

5. Samples of the different fertilizers used, including cotton seed meal, acid phosphate, raw rock phosphate, German kainit, potassium sulphate, sodium nitrate.

6. Samples of different feed stuffs.

7. Hoes (number left for school to decide).

8. Rakes (number left for school to decide).

9. Spading forks (number left for school to decide).

10. One good steel beam plow.
11. One good small steel frame harrow.
12. One set "Science-Sense" minerals (The Geography Supply Bureau, Ithaca, N. Y.).
13. Different measures—pint, quart, peck, half bushel, bushel.
14. One set of store scales.
15. One drainage level with full equipment.
16. Seeds for planting purposes.
17. One good set of tools.
18. Budding and pruning knives.
19. Trowels, to be used in transplanting.
20. One square spade and one tiling spade.
21. One hand wheel hoe.
22. One hand seed drill.
23. Apparatus for weather work. (Correspond for nearest district forecaster for Weather Bureau.)

ADOPTED TEXTS IN AGRICULTURE.

First year. Duggar's Agriculture.
Second year. Duggar's Southern Field Crops.
Third year. Harper's Animal Husbandry.
Fourth year. Snyder's Soils and Fertilizers.

Any one of these may be used in connection with Botany, First year, I.

HOME ECONOMICS CURRICULUM.

This course differs from the Agriculture Course in the first year only in the substitution of sewing and cooking for field and shop. In the second year elementary bacteriology for one term and physiology for the second term are recommended. In the third year poultry and dairying will be studied while the boys of the agricultural course are taking up these subjects in connection with farm animals, and food study and dietetics will occupy the balance of the time. The second term of the fourth year will be given to the study of secondary arithmetic and farm accounts, and two periods a week throughout the session will be given to practical arts, which study includes household management.

PRACTICAL ARTS FOR GIRLS.

(This course is recommended by Charlotte Joy Farnsworth, Ph. B., Preceptress of Horace Mann School, Teachers College, Columbia University.)

Syllabus of a course for senior high school girls:

I. Economics of Clothing.
II. Home Sanitation and Management.
III. House Furnishing.
IV. Social Relations and Conduct.
V. Recreation and Enjoyment.

Throughout the year, twice a week, sixty sessions.

I. Economics of Clothing:

Aim.—To plan an allowance, to learn something about textile materials and also how to shop to advantage.

1. Planning a wardrobe; different articles of clothing proportioned.
2. Cost of different articles.
3. Comparison between the cost of bought and home-made clothes.
4. Comparison between allowances of $150—$300—$500.
5. Proportioning the allowance for the clothing of the family.
6. Planning the clothing for the family.
7. Materials—kinds, cost, value.
8. Cotton, linen.
9. Wool, silk.
10. Simple tests for judging materials.
11. How to shop and where to shop; the moral responsibility of the consumer.
12. How to make clothing last long and remain in good condition; some hints as to the relation of clothing to beauty and health.

II. Home Sanitation and Management:

General Aim.—To study the fundamental principles of home sanitation and management, and home care of sick and emergency work.

1. Definition of a home; owning one's own home; types of homes—city and suburban; the economic aspect of rent-paying;

the suburban home—study of the site; the facing of the house; drainage; elevation; setting out of trees; beautifying town houses and lots.

2. The water supply; sources of contamination; purification, filtration, boiling, distilling, apparatus on the market.

3. House plans; construction of cellar.

4. Air supply; heating and lighting.

5. Disposal of waste—household garbage; sewerage systems; care of plumbing.

6. Marketing.

7. Food sanitation; the milk problem; selection and care of milk.

8. The cleaning of the house.

9. Household accounts; division of income; banking.

10. Planning the work of the home; making the menus; the labor problem.

11. Home nursing; furnishing and care of sick-room; guarding against contagion; bed-making; care of patient in bed.

12. Care in cases of wounds in bleeding; bandaging; stings, burns and poisoning.

III. House Furnishing:

Aim.—To study the principles underlying good taste and economy in household furnishings.

1 and 2. Line—study of the walls of a room with reference to spacing, proportion, beauty of line; division of wall spaces; placing of picture moulding, frieze, dado; placing of furniture; hanging of pictures.

3 and 4. Color—its properties, hue, value, intensity; effect of one color upon another; complementary colors; how to subdue a color; color vibration; warm and cool colors.

5. Choosing a color scheme—the application of 3 and 4 to the walls and furnishings of the home; colors suitable to different rooms.

6. Walls, portieres, curtains—good and bad design in wall-papers or hangings, and in textiles; wall finish suitable to hall, dining room, living room, bed room, kitchen.

7. Floors and floor coverings—rugs vs. carpets; color and design; wearing qualities of the different kinds; care of floors.

8. Furniture—construction; proportions; good lines; appropriateness.

9. Pictures, casts, and small ornaments—choice of pictures; framing a picture; hanging a picture; wise use of casts; value of small ornaments.

10. Accessories—conveniences; special arrangements for use or beauty; clever contrivances.

11. What to avoid—a chapter of "dont's" based upon observations made by teacher and students.

12. Summing up.

IV. Social Relations and Conduct:

Aim.—To study how to increase the effectiveness and pleasure and reduce friction, when individuals meet.

The Individual.—1. Health: care of body, cleanliness, its social significance. 2. Health: effective exercises, diet, rest. 3. Manners: the means of social expression.

The Home.—4. Courtesies and customs of the table. 5. Celebrations and festivities. 6. Intercourse with elders.

The School.—7. Christmas fair. 8. Class party; senior play. 9. Basketball game; swimming meet.

Society.—10. Opportunities in society. 11. Settlement work. 12. Other social service.

V. Recreation and Enjoyment:

Aim.—To get the most out of our free time and the opportunities given, through widening, intensifying, and clarifying our tastes. Value of plan, versus drift, in our leisure time.

Outdoor Activities.—1. Walks with special interests or hobbies, such as birds, flowers, stars, photography. 2. Sports. 3. Excursions.

Productive Activity.—4. With tools, work in wood, iron, clay; printing; weaving. 5. Painting; decorating. 6. Playing and singing.

Appreciative Activity.—7. Reading, poetry, fiction. 8. Listening to music, home, concert. 9. Opera. 10. Theatre. 11. Museums and exhibits. 12. Summary, of course; formation of standards in living, doing and feeling.

HOME ECONOMICS.

EDUCATIONAL.

	Publishers' Price.	Library Price.
McMurry's Method of the Recitation, Macmillan	$ .90	$ .81
Bagley's Educational Process, Macmillan	1.25	1.13
Harrison's A Study of Child Nature	1.00	1.00
Thorndike's Notes on Child Study, Columbia University Press	1.00	1.00
Wright's Industrial Evolution, Scribner	1.25	1.13
Hann's A Modern School, Macmillan	1.25	1.13

DOMESTIC ART.

Woolman's Course in Sewing for Teachers, Seiler	1.50	1.35
Cooley & Kinnie's Domestic Art in Women's Education, Scribner	1.25	1.25

COTTON.

Wilkinson's Story of Cotton Plant, Appleton	.35	.35
Chisholm's Handbook of Commercial Geography, L. G. & Co.	4.80	4.80
Chamberlain's How We Are Clothed, Macmillan	.40	.36
Humel's Dyeing of Textile Fabrics, McKay	1.00	1.00

MAGAZINES.

Journal of Home Economics	2.00	2.00
Good Housekeeping	1.50	1.50
School Arts Magazine	2.00	2.00
Boston Cooking School Magazine	1.00	1.00

RURAL TEACHER TRAINING CURRICULUM.

An elementary basis in practical agriculture, some knowledge of poultry and dairying, and three years' practical work in sewing and cooking seem to furnish an excellent basis for the teacher who is being trained for service in rural communities. A term of elementary psychology and a term of school management in the third year give the first professional insight into the work. In the fourth year, particular attention is given to reviews of the common school subjects and methods of presenting these subjects. At least three periods a week in this pro-

fessional work should be double periods. Two periods a week in practical arts is also prescribed for students taking the rural teacher-training course.

MANUAL TRAINING.

This course at present provides only for instruction and exercises in woodwork and drawing, and includes:

1. Lessons in kinds and qualities of woods, care of tools, etc.
2. Instruction and exercises in free-hand and mechanical drawing of objects used as exercises.
3. Instruction and exercises in bench work in wood-sawing, planing, tenons, mortises and joinery.
4. Project work.

Preliminary preparation should include the equivalent of two periods a week for one year in the use of tools and the making of simple articles out of wood.

First Year.

Mechanical Drawing.—Two and three double periods per week alternating with wood work.

Wood work.—Three and two periods (double) per week alternating with mechanical drawing.

Exercises in Wood Work.

Note.—Under this heading are given (1) the kind of model, (2) the exercises, and (3) the material to be used.

Gate (rough); measuring, squaring, sawing, boring, and planing; pine wood.

Trestle benches; angle-sawing, nailing; pine wood.

Work bench, table, or sand table; measuring, squaring, boring, sawing, end and surface planing, gluing, screwing; pine or oak.

Towel roller; sawing, boring, end and surface planing, gauging, planing cylinder, counter-sinking, screwing, chiseling, scraping, sandpapering; oak, pine or cypress.

Stand, tabouret, bookcase, or magazine stand; broad surface planing, doweling, gluing, ripping, chiseling chamfering, sandpapering (with and without block), staining; pine, cypress or oak.

Second Year.

Mechanical drawing and shop work to be given the same time and unit valuation as in the first year.

Drawing board; doweling, edge, end and surface planing, boring, screwing, clamping, filling; cypress or white pine.

Tee square; gauging and chamfering; hard pine and oak.

Bread board; same as drawing board with use of spoke shave; sweet gum.

Picture frame; half lapping joint or mitering, rabbeting; cypress, pine or oak.

Table or cabinet; doweling joints, blocking; pine or oak.

Additional Exercises.

First Year.

Pointer
Billfile
Coat hanger
Plant pot stand
Pen tray
Hatchet handle
Broom holder
Bracket shelf
Towel rack

Second Year.

Knife box
Half splice
Mortise tenon
Double tenon
Mortise and tenon
Keyed tenon
Dovetail
Half-mitre frame
Medicine cabinet
Mission chair

1913. 1916.

PRICE-LIST OF TEXT BOOKS

Adopted for use in the Public Schools of Louisiana

FOR SALE BY

F. F. HANSELL & BRO., LTD-

STATE DEPOSITORY

123-125 CARONDELET STREET, NEW ORLEANS

ELEMENTARY SCHOOLS

AGRICULTURE.

Burkett, Stevens & Hill's Agriculture.....$ .60

CIVICS.

Dunn's Community and the Citizen..... .60

DICTIONARIES.

Webster's Primary Dictionary..... .44
Webster's Common School Dictionary..... .65

DRAWING.

	Per Doz.
No. 1, Prang's Art. Ed. Drawing Books	$1.56
No. 2, Prang's Art Ed. Drawing Books	1.56
No. 3, Prang's Art Ed. Drawing Books	1.56
No. 4, Prang's Art Ed. Drawing Books	2.16
No. 5, Prang's Art Ed. Drawing Books	2.16
No. 6, Prang's Art Ed. Drawing Books	2.16
No. 7, Prang's Art Ed. Drawing Books	2.16
No. 8, Prang's Art Ed. Drawing Books	2.16

PRANG'S ART EDUCATIONAL DRAWING BOOK COURSE—THREE BOOK SERIES FOR RURAL SCHOOLS.

	Per Doz.
Primary Book	$2.16
Intermediate Book	2.40
Advanced Book	2.40

GEOGRAPHY.

Frye's First Course Geography..... .40
Frye's Higher Geography..... .88

HISTORY.

Estill's Beginners' History of Our Country..... .40
Evans' Essential Facts of American History..... .70
Magruder's History of Louisiana..... .65
King & Ficklen's Stories from Louisiana History..... .75

LANGUAGE.

Hyde's Two-Book Course in English, Book I..... .22
Hyde's Two-Book Course in English, Book II..... .40

MATHEMATICS.

Nicholson's New Primary Arithmetic	.13
Nicholson's New Intermediate Arithmetic	.20
Nicholson's Grammar School Arithmetic	.40
Nicholson's School Algebra	.90
Brook's Mental Arithmetic	.28

MUSIC.

Smith's Primer of Vocal Music	.25
Smith's First Book of Vocal Music	.30
Smith's Second Book of Vocal Music	.40
Smith's Alternate Third Book of Vocal Music	.50
Smith's Common School Book of Vocal Music	.40
Beacon Song Collection, No. 2	.72

PHYSIOLOGY.

Krohn's First Book in Physiology	.30
Krohn's Graded Lessons in Physiology and Hygiene	.50

READERS.

Wheeler's Primer	.25
Wheeler's First Reader	.25
Wheeler's Second Reader	.35
New Education Reader, Book I	.31
New Education Reader, Book II	.31
Brumbaugh's Third Reader	.35
Brumbaugh's Fourth Reader, Part II	.35
Brumbaugh's Fifth Reader, Part II	.40
Curry's Literary Readings	.60

SPELLERS.

Century Speller, Part I	.13
Century Speller, Part II	.13
Century Speller, Complete	.18

WRITING BOOKS.

	Per Doz.
No. 1, Haaren's Writing Books	.60
No. 2, Haaren's Writing Books	.60
No. 3, Haaren's Writing Books	.60
No. 4, Haaren's Writing Books	.60
No. 5, Haaren's Writing Books	.60
No. 6, Haaren's Writing Books	.60
No. 7, Haaren's Writing Books	.60
No. 8, Haaren's Writing Books	.60

HIGH SCHOOLS

AGRICULTURE.

Duggar's Agriculture..... .60
Duggar's Southern Field Crops..... 1.54
Harper's Animal Husbandry..... 1.23
Snyder's Soils and Fertilizers..... 1.10

BOOKKEEPING.

Williams & Rogers' Bookkeeping, Introductory..... .90
Williams & Rogers' Bookkeeping, Advanced..... .77
Huffcut's Business Law..... .94

CIVICS.

Boynton's Civics, Louisiana Edition..... 1.00
Bullock's Economics..... .80

DICTIONARIES.

Webster's High School Dictionary..... .90
Webster's Academic Dictionary..... 1.35

FRENCH.

Fraser & Squair's French Grammar..... 1.12
Francois Introductory French Composition..... .23

GEOGRAPHY.

Adams' Commercial Geography..... .91

HISTORY.

Botsford's Ancient History..... 1.20
Meyer's Mediaeval and Modern History..... 1.41
Coman's Industrial History of United States..... 1.25
Stephenson's American History..... 1.41

LANGUAGE.

Smith's Our Language Grammar..... .40
Brooks & Hubbard's Composition and Rhetoric..... .90
Tappan's Short History of English and American Literature..... 1.00

LATIN.

Gunnison & Harley's First Year Latin..... .90
Gunnison & Harley's Caesar..... 1.12
Gunnison & Harley's Cicero..... 1.12

MATHEMATICS.

Nicholson's Advanced Arithmetic..... .60
Nicholson's School Algebra..... .90
Wentworth's Plane Geometry..... .71
Wentworth's Solid Geometry..... .71
Nicholson's Plane and Solid Trigonometry..... .99

PHYSIOLOGY.

Ritchie's Human Physiology..... .60

READERS.

Literary Masterpieces..... .65

SCIENCES.

Andrews' Botany All the Year Round..... .90
Gorton's High School Course in Physics..... 1.03
Hessler & Smith's Essentials of Chemistry..... .83
Herrick's Text-Book in Zoology..... 1.08

SUPPLEMENTARY READERS

New Education Reader No. 3	.36
New Education Reader No. 4	.40
Wheeler's Third Reader	.50
Wheeler's Fourth Reader	.50
Wheeler's Fifth Reader	.60

GRADED CLASSICS—(Norvell & Haliburton).

Graded Classics First Reader	.30
Graded Classics Second Reader	.35
Graded Classics Third Reader	.40
Graded Classics Fourth Reader	.45
Graded Classics Fifth Reader	.50

CLASSICS, OLD AND NEW—(E. A. Alderman).

Classics Old and New—A First Reader	.25
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STEPPING STONES TO LITERATURE—(Arnold & Gilbert).

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Baker & Carpenter Language Readers—3rd Year	.40
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